Promoting Vaccines During Pregnancy:

Assessment of Current State and Strategy Recommendations

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Report Prepared for Vax Northwest by KPWHRI and WithinReach

KPWHRI Team: Clarissa Hsu, Leonardo Colemon, Lily Shapiro, Kim Arthur, Tyler Barrett, Lawrence Madziwa, John Ewing

WithinReach Team: Ajia McAferty, Sarah Salomon, Janna Houston, Mariah Farris-Enriquez, Elisa Seid

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I. Executive Summary

This report presents the findings of a mixed-methods data collection effort examining practices, attitudes, and barriers related to administering the vaccines recommended during pregnancy in Washington state. Conducted by Vax Northwest in partnership with WithinReach and Kaiser Permanente Washington Health Research Institute, the project aimed to identify strategies to increase uptake of four vaccines recommended during pregnancy: COVID-19, influenza, Tdap, and RSV.

The data collection was carried out in support of developing a longer-term plan for promoting vaccines in pregnancy using a Targeted Universalism framework. The three data collection components were: a survey of prenatal health professionals, in-depth key informant interviews with pre/perinatal health professionals, and six focus groups consisting of pregnant or recently pregnant individuals, including two Spanish-language groups.

Findings reveal significant variation in both what professionals recommend and patient acceptance across vaccine types. Tdap and RSV vaccines had the highest recommendation and uptake rates, largely due to their clear neonatal benefits and, in the case of Tdap, its long-standing history of use. In contrast, influenza and COVID-19 vaccines were less frequently recommended and more often refused or viewed with skepticism. Attitudes regarding flu and COVID-19 were influenced by the perception that the diseases did not pose major health risks to the pregnant person or the baby, concerns about vaccine safety and efficacy, and misinformation, especially in the case of the COVID-19 vaccine. Spanish-speaking participants reported lower rates of being offered or informed about flu and COVID-19 vaccines, suggesting disparities in professionals' communication.

A central theme across all data sources was that vaccine decision-making during pregnancy is strongly tied to the desire to protect the baby, rather than the pregnant person's own health. Professionals often framed vaccine discussions around the health of the baby, which proved to be an effective strategy, especially for Tdap and RSV. Additionally, many participants cited personal or cultural experiences—such as past illness, immigration background, or systemic mistrust of healthcare institutions—as influential in their decisions.

Professionals reported using a range of strategies to address vaccine hesitancy, including a presumptive, shared decision-making, and motivational interviewing approach to offering and counseling about vaccines. However, they also noted barriers such as limited time during appointments, logistical issues with vaccine storage and billing, and concerns about damaging the therapeutic relationship with patients. Medical assistants, often responsible for initiating vaccine conversations and administering doses, were identified as key influencers, though

survey results suggest they may lack confidence in vaccine safety and efficacy.

The report concludes with actionable recommendations at both the clinic and policy levels. Clinic-level strategies include adopting presumptive communication approaches, emphasizing neonatal benefits of all vaccines, strengthening the training of all clinical team members (especially non-physician staff), and using motivational interviewing techniques. Policy recommendations include expanding access to high quality education materials (especially written materials), initiating a broad public education campaign, supporting systemic improvements to vaccine access in prenatal care settings, and addressing disparities in communication and outreach to marginalized communities. These findings will be used to inform Vax Northwest's efforts to develop a Targeted Universalism goal, prioritize strategies to achieve that goal, and evaluate progress toward that goal.

Next steps are to use this report to continue to explore the data and refine the recommend strategies with the Vax Northwest Oversight Committee and the Vaccines in Pregnancy workgroup. These exploratory tasks will be part of the co-creation process that will move Vax Northwest toward a final Targeted Universalism plan related to promoting vaccines for pregnant people.

II. Background

Vax Northwest has long been interested in exploring how to support vaccination during pregnancy. OB/GYN and prenatal/perinatal health professionals are in a unique position to improve vaccination for non-pregnant women and pregnant people. Many non-pregnant women see these professionals as their sole source of medical care, while pregnancy is an ideal time to communicate about vaccines for pregnant people and their soon-to-arrive infants. Furthermore, some prenatal/perinatal professionals are vaccine hesitant or openly reject vaccines.

In 2022, the topic of examining vaccinations during pregnancy reemerged as a priority for Vax Northwest. A working group was assembled called the Access to Perinatal Vaccines Working Group to develop a project plan based on the Targeted Universalism framework.

Sandra McAteer, an intern collaborating with the workgroup, conducted a literature review that detailed the following background information.

Background and Current Recommendations for Vaccines During Pregnancy
Vaccine-preventable infections during pregnancy add risks for pregnancy and birth complications and may be associated with high costs of hospitalizations and treatments in severe cases. Vaccination against specific infections during pregnancy helps to reduce the risk of contracting infections and developing severe disease and allows for the passage of antibodies to the fetus through the placenta. This level of protection at birth serves newborns in the vulnerable period before they are eligible for first round vaccinations and as their own adaptive immunity develops.

Based on the risks associated with infections during pregnancy and evidence regarding vaccine safety and efficacy, the Advisory Committee on Immunization Practices (ACIP) recommends four vaccines to be administered during pregnancy. As of 2024, all pregnant individuals are recommended to receive booster vaccinations against COVID-19 during any trimester and tetanus, diphtheria, and acellular pertussis vaccine (Tdap) between 27- and 36-weeks' gestation.1 For pregnancies during influenza (flu) and respiratory syncytial virus (RSV) infection seasons from October through February, individuals are recommended to receive inactivated or recombinant influenza vaccination during any trimester of the influenza season and RSV vaccine if between 32- and 36-weeks' gestation and not previously vaccinated against RSV.1,2 Understanding attitudes and behaviors related to vaccination during pregnancy is of great importance. Understanding barriers to vaccination can and should ultimately inform policy and strategies to improve vaccination coverage and reduce the burden of vaccine-preventable disease in pregnant people and newborns.

Burden of Vaccine-preventable Infections during Pregnancy

- *Influenza:* Pregnant individuals are at increased risk of hospitalization and illness severity when infected with seasonal influenza compared to non-pregnant people. A study by the Centers for Disease Control and Prevention (CDC) revealed that women aged 15-44 years who were pregnant accounted for 26.1% of hospitalizations during the 2018-19 influenza season and 37.4% in the 2020-21 influenza season.3 Complications derived from an influenza infection during pregnancy also increase the risk of preterm labor and birth. Vaccination against influenza if pregnant during the influenza season can reduce the risk of infection and hospitalization by 40%.3,4
- *Tetanus:* Tetanus infection of a pregnant person or a newborn within 28 days of life (maternal and neonatal tetanus) account for thousands of deaths globally per year.5 In the United States, tetanus is rarer due to effective vaccine delivery and improvements in coverage levels. In 2022, the World Health Organization (WHO) reported approximately 28 total tetanus cases, mostly among unvaccinated adults, and three cases of neonatal tetanus in the U.S. were reported between 2009-2017.6,7 However, any neonatal tetanus infections, often a result of maternal infection transmitted during childbirth or infection by contaminated birth instruments, can be highly fatal or have long-term neurological implications.8
- *Pertussis:* Cases of pertussis during pregnancy in the U.S. have been steadily increasing, including in Washington state.9 Nationally, pertussis infections occur in approximately 7.7 per 100,000 pregnancies annually, with more pregnant patients reporting a “whoop” cough and other symptoms compared to non-pregnant cases.10 Maternal immunization protects against infection during pregnancy and helps protect the population most vulnerable to pertussis. Infants account for approximately 88% of fatal cases and are at greatest risk between birth and eligibility for their first set of vaccinations.10,11
- *COVID-19:* COVID-19 infection is about as prevalent among pregnant people as among non-pregnant people, with approximately 130.2 hospitalizations per 100,000 people in the 2023-2024 season and 250.1 per 100,000 people in the 2022-2023 season.12 However, infection during pregnancy has been linked to elevated risk of mortality and other severe complications, such as acute kidney injury compared to nonpregnant people, and perinatal complications, particularly in the third trimester.13 In a study of hospital deliveries in 2020, incidence of COVID-19 was 17.6 per 1,000 pregnancies and 63% of hospitals treated pregnant patients with COVID-19 at delivery.14
- *Respiratory Syncytial Virus (RSV):* Symptoms of RSV often present mildly, but infection during pregnancy places individuals at greater risk of perinatal complications such as preterm labor and birth.15 Notably, infection during pregnancy poses greatest risk of transmission to the fetus, with newborns being the

Estimates of Vaccination Coverage

- *Influenza:* In a national survey study conducted by the CDC in April 2022, 975 (48.4%) of respondents who were pregnant between October 2021-January 2022 reported receiving flu vaccine prior to or during pregnancy.18 Data provided by the National Center for Health Statistics (NCHS) and Washington Department of Health (DOH) from births in 2021 in Washington state showed 34.6% of individuals who gave birth got vaccinated against flu during pregnancy.19,20 Flu uptake was lower among pregnant individuals with an Associate degree or lower level of education and among individuals who identified as non-Hispanic American Indian Alaska Native, non-Hispanic Black, and non-Hispanic White (30-32%) compared to those who identified as non-Hispanic Asian, Hispanic, and non-Hispanic Native Hawaiian or Pacific Islander.19,20 During the 2022-2023 flu season in Washington state, data on vaccination coverage showed a 15% drop compared to rates before the COVID-19 pandemic.21
- *Tdap:* In a national survey study conducted by the Center for Disease Control and Prevention (CDC) during the 2021-2022 flu season, 383 (45.8%) of respondents who had a live birth outcome by survey date reported receiving Tdap.18 For Washington state, NCHS and Washington DOH data among individuals who gave birth in 2021 show 54.7% received the Tdap vaccination during pregnancy, with an increase in coverage among individuals as adequacy of prenatal care accessed increased. Adequacy is defined by the Kotelchuck Index which includes when prenatal care began (or initiation), and the number of visits received throughout the duration of the pregnancy through delivery. 19,20 The uptake of Tdap was lower (approximately 52%) for pregnant individuals with an education level of high school, some college, or associate degree compared to individuals with a bachelor's degree or higher (58-63%). Uptake of Tdap for this population in Washington state was similar across racial and ethnic groups.19,20
- *COVID-19:* According to national data from the Vaccine Safety Datalink (VSD) from September 2023 to May 2024, 13.3% of pregnant people received the updated 2023-24 COVID-19 vaccination before or during pregnancy.22 NCHS and Washington DOH data from Washington state individuals who gave birth between March and December 2021 showed that 25.2% completed the COVID-19 series during pregnancy and 70.0% did not initiate any COVID-19 vaccinations during pregnancy.19,20 This data also showed that individuals with lower vaccination initiation or completion rates tended to be younger (less than 30 years of age) and have a lower level of education (associate degree or lower). Pregnant people who identified as non-Hispanic Black and non-Hispanic Native Hawaiian or Pacific Islander had the lowest rates of COVID-19 vaccine initiation and completion (10-15%).19,20 A separate study conducted through the Washington State COVID-19 in Pregnancy

Estimates of Vaccination Coverage (continued)

- *RSV:* RSV vaccination (Abrysvo) was made available and recommended for pregnant people beginning in fall 2023, with 7,771 doses administered to adults 18-49 years old in Washington state between September 2023 and May 2024.2,24 In January 2024, the Vaccine Safety Datalink reported that national RSV vaccination coverage among individuals who reached at least 32 weeks' gestation since September 2023 averaged 17.8%.25 In this estimate, individuals with coverage below the average identified as non-Hispanic Black (10.3%), Hispanic/Latino (15.6%), and non-Hispanic Native Hawaiian and Pacific Islander (16.9%).25 Currently, the RSV vaccination is only indicated for use in 18–49-year-old individuals if 32-to 36- weeks' pregnant during the RSV season.26 Due to the recency of the ACIP recommendation, additional rate information and demographic factors for maternal RSV vaccination coverage in Washington state, and nationally, are scarce.

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Based on this literature review and ongoing conversation among the workgroup, the following Universal Goal was developed along with some additional objectives aimed at refining the goal and developing a robust list of strategies.

Universal Goal: All pregnant people in Washington state can successfully access recommended vaccines during pregnancy.

1. **Objective 1:** Identify current vaccine practices and barriers to vaccine administration in prenatal/perinatal care settings across Washington state by conducting a survey and key informant interviews with pre/perinatal health professionals, and focus groups with pregnant or recently pregnant individuals
2. **Objective 2:** Identify targeted strategies to increase immunizations among pregnant people in Washington state.

These objectives were to be fulfilled by carrying out a mixed-methods study of prenatal health professionals and pregnant people to examine behaviors and attitudes regarding Tdap, Influenza, RSV, and COVID-19 vaccines during pregnancy using the Targeted Universalism framework. The proposed methods were three-pronged: 1) a survey of prenatal health professionals, 2) key informant interviews with prenatal health professionals, and 3) focus groups with pregnant or recently pregnant people.

This document reports on the methods used to collect mixed-methods data, key findings from the data, and key strategies and recommendations that emerged from the data. Funding was awarded by Washington DOH to WithinReach, as the backbone organization to Vax Northwest and fiscal sponsor, to help accomplish these objectives collaboratively with Kaiser Permanente Research Institute of Washington and the workgroup.

III. Methods

Survey

We conducted an online survey of pre/perinatal health professionals in Washington state who provide care to pregnant people. The survey was open from March to April 2025 and asked about a variety of topics related to respondents' attitudes and practices regarding offering or recommending each of the four vaccinations recommended during pregnancy (COVID-19, influenza, Tdap, and RSV) to their pregnant patients. The survey also asked about barriers to providing or discussing vaccinations, as well as professionals' approaches if a patient expressed hesitancy.

No stipend was offered to participate in the survey, in part to prevent fraudulent responses. A recruitment postcard, recruitment emails, and text messages were created and converted into a suite of digital materials that were emailed to large distribution lists and posted in newsletters and digital forums that included perinatal health professionals. Recipients included WithinReach's Perinatal and Child Health network of providers and Plan of Safe Care Partners' Community of Practice, Tribal Urban and Indian Health Immunization Coalition, WA Chapter of the American Academy of Pediatrics, Immunity Connections Newsletter (900 subscribers), Pierce County Immunization Coalition, Washington Medical Commission (106 targeted recipients), Clark County Immunization Coalition, Washington HPV Free Taskforce, Local Health Jurisdictions, Washington Department of Health's newsletters included in the Vaccine Blurbs, Vaccines for Respiratory Illnesses, IIS, and Health Plan Partnership listservs, Washington Community Collaborative, Washington Perinatal Collaborative, Washington Prenatal-to-Three Coalition (92 subscribers), WithinReach's Making Connections newsletter and obstetrics and family medicine providers at Kaiser Permanente.

Members of the workgroup and Vax Northwest were encouraged to distribute the recruitment materials to relevant lists and individuals. Although we had aimed to recruit twice as many survey respondents and planned additional recruitment efforts, time limitations due to delays in contracting and unexpected IRB requirements prevented us from implementing these plans.

Table 1: Role of survey respondents

Role	n	Percent
Advanced Practice Registered Nurse/Nurse practitioner	1	0.7%
Certified Nurse Midwife	12	7.8%
Doula	15	9.8%
Licensed Practical Nurse	2	1.3%
Licensed Professional Midwife	37	24%
Medical Assistant	8	5.2%
Pharmacist	2	1.3%
Physician	42	27%
Physician Assistant	2	1.3%
Registered Nurse	28	18%

153 people responded to the survey, representing 22 counties in Washington state. The survey

responses were analyzed using descriptive statistics.

Key Informant Interviews

At the end of the survey, respondents had the option to indicate whether they would be willing to participate in a paid, one-time in-depth interview. From those who volunteered, we purposively sampled to speak with professionals from a range of counties in Washington and who hold a variety of professional roles. In April and May 2025, we conducted 12 one-hour phone interviews with prenatal care professionals from 5 different counties in Washington state. Interviewees received a $75 stipend for their participation.

In the interview, we asked professionals to share their general approach to counseling patients, their experiences and strategies discussing vaccinations with pregnant patients who refuse or express hesitancy, any barriers they face in providing vaccines to pregnant patients, as well as their recommendations to increase access to and public support for vaccines during pregnancy.

Table 2: Role of key informants

Role	n	Percent
Certified Nurse Midwife	1	8%
Licensed Professional Midwife	2	17%
Physician Assistant	1	8%
Physician	6	50%
Registered Nurse	2	17%

All interviews were recorded and transcribed. Rapid Group Analysis Process (Rap-GAP) was used to analyze transcript data.

Focus Groups

In April and May 2025, we conducted six 90-minute virtual focus group discussions with people in Washington state who were currently pregnant or had been pregnant within the last year. Two of these focus groups were conducted in Spanish, and four in English. Participants received a $75 stipend.

Participants were recruited by WithinReach staff from a pool of former WithinReach clients who had accessed Help Me Grow resources and services within the last year and indicated that they were pregnant at the time and were open to being contacted. With these criteria, 646 clients were identified (516 English speakers and 130 Spanish speakers) for outreach. WithinReach clients were given an initial phone call followed by a recruitment script to share information about the opportunity to participate in a focus group. They were informed that they would subsequently receive a recruitment eligibility survey form via text message. If they did not answer the initial outreach phone call, WithinReach left a voicemail and sent a text message. Clients who were interested completed the survey form to determine eligibility and availability. Any respondents who indicated strongly opposition to vaccines was screened out. Clients who met the eligibility criteria and were available to participate were sent a

confirmation text message with the date, time, and instructions. They were then sent a virtual Microsoft Teams meeting link via email to participate. If ineligible, they were sent a text message notification. Reminder calls to all participants were conducted the business day prior to the focus group.

Two of the focus groups were conducted in Spanish with two bilingual facilitators. During the focus group, respondents were asked to share their opinions about vaccines during pregnancy, including concerns and hesitations, their experiences receiving or discussing vaccines with their pre/perinatal care professionals, including if vaccines had not been discussed with or offered to them, any barriers they faced in accessing vaccines, and trusted sources of information about vaccines.

All focus groups were transcribed, and the groups conducted in Spanish were transcribed in Spanish and then translated into English. Rapid Group Analysis Process (Rap-GAP) was used to analyze transcript data.

IV. Findings

A. Who participated?

The following tables provide details about who participated in each of the data collection activities.

Survey: Respondent characteristics

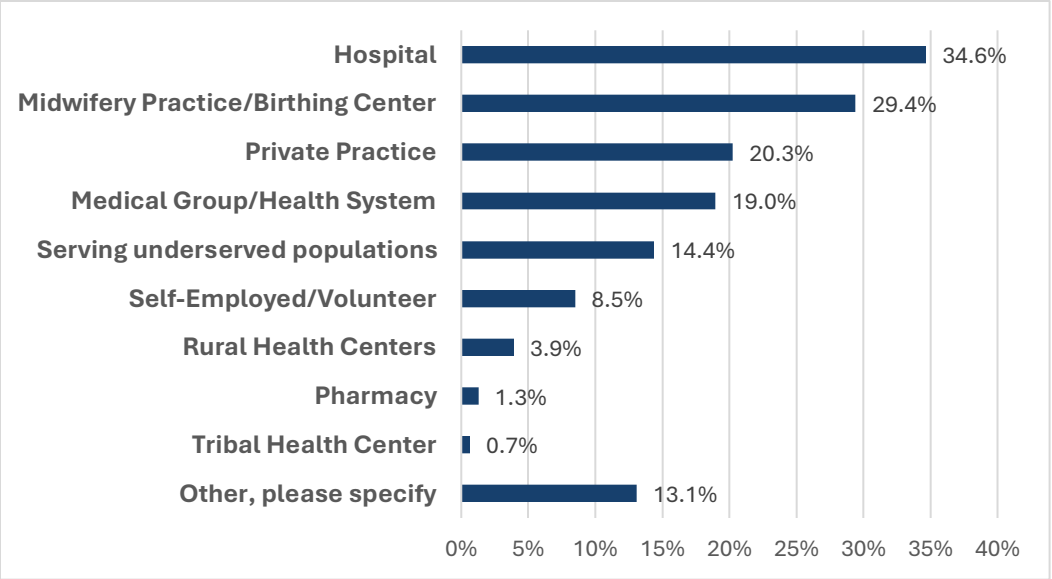
Survey respondents (Table 3) disproportionately identified as female and the majority were White. Physicians were the most commonly represented role, followed by midwives, and registered nurses. Most spend 60% or more of their time providing care for pregnant people.

Table 3: Demographic characteristics of survey participants

	Full sample (N= 153)
	N (%)
Gender	
Male	5 (3.3%)
Female	115 (75%)
Non-binary	4 (2.6%)
Prefer not to disclose/No response	29 (19%)
Age range	
25-34	19 (12%)
35-44	47 (31%)
45-54	30 (20%)
55-64	27 (18%)
Above 65	2 (1.3%)
Blank	28 (18%)
Race	
White	103 (67%)
Black or African American	3 (2.0%)
Asian	8 (5.2%)
Blank	28 (18%)
More than one race	4 (2.6%)
Other	2 (1.3%)
Prefer not to disclose	5 (3.3%)
Ethnicity	
Hispanic or Latino	6 (3.9%)
Not Hispanic or Latino	110 (72%)
Other	3 (2.0%)
Prefer not to disclose	6 (3.9%)

Blank	28 (18%)
Current role	
Physician	42 (27%)
Physician Assistant	2 (1.3%)
Pharmacist	2 (1.3%)
Advanced Practice Registered Nurse	1 (0.7%)
Certified Nurse Midwife	12 (7.8%)
Licensed Practical Nurse	2 (1.3%)
Medical Assistant	8 (5.2%)
Registered Nurse	28 (18%)
Midwife	37 (24%)
Doula/Lactation Consultant	15 (9.8%)
Other (Physical Therapist, Dental Hygienist, Vaccine Coordinator, WIC Certifier)	4 (2.6%)
Years in role	
Mean	11.13
Median	10
Standard deviation	8.74
Range	1-45
Percentage of practice dedicated to providing pregnancy- and delivery-related care	
Mean	62.82
Median	67
Range	1-100

Figure 1: Survey respondents practice settings



Key Informant Interviews: Respondent characteristics

The respondents to the Key Informant Interviews (KIIs) included more people who identified as White and slightly more physicians than in the overall survey sample (Table 4). Attempts were made to distribute the sample across a variety of roles, but we were limited by who volunteered to participate in the KIIs and who responded to our interview invitations. Based on our analysis of the interview transcripts it appears that the KII respondents ended up biased towards people who were supportive of vaccines. While we had some survey respondents that expressed anti-vaccine views, all KII respondents were supportive of vaccines during pregnancy.

Table 4: Demographic characteristics of key informant interview participants

	Full sample (N= 12)
	N (%)
Gender	
Male	2 (16.7%)
Female	9 (75%)
Non-binary	1 (8.3%)
Age range	
25-34	2 (16.7%)
35-44	8 (66.7%)
45-54	2 (16.7%)
Race*	
White	11 (92%)
Black or African American	1 (8%)
Asian	0
More than one race	0
Ethnicity*	
Hispanic or Latino	1 (8%)
Not Hispanic or Latino	11 (92%)
Current role	
Physician	6 (50%)
Physician Assistant	1 (8%)
Certified Nurse Midwife	1 (8%)
Registered Nurse	2 (17%)
Licensed Professional Midwife	2 (17%)
County of Practice	
King	8 (67%)
Pierce	1 (8%)
Spokane	1 (8%)

Thurston	1 (8%)
Yakima	1 (8%)
* Respondents were allowed to select multiple answers; therefore, the percentages may exceed 100%	

Focus groups: Respondent characteristics

For the focus groups with pregnant or recently pregnant people, all participants identified as female and over half identified as Hispanic/Latino, while 38% identified as white (Table 5). Participants represented a range of ages and education levels. Most reported having no or only one child in their household. A little over half were married or living with a domestic partner. The majority were on Medicaid and/or Medicare. Overall, the focus group participants were more diverse than the population in Washington as a whole.

Table 5: Demographic characteristics of focus group participants

	Full sample (N= 53)
	N (%)
Gender	
Female	53 (100%)
Male	0
Non-binary	0
Age range	
18-24	15 (28%)
25-30	16 (30%)
31-35	11 (21%)
36 and above	11 (21%)
Race/Ethnicity*	
White	20 (38%)
Black or African American	9 (17%)
Asian	4 (8%)
Native Hawaiian or Pacific Islander	1 (2%)
Hispanic or Latino	23 (43%)
Education	
Elementary or middle school/junior high	3 (6%)
Some high school, but not a graduate	4 (8%)
High school graduate or GED	16 (30%)
Some college or 2-year degree	12 (23%)
Bachelor's degree	14 (26%)
Master's degree or higher	4 (8%)
Children in Household	
None	13 (25%)
One	22 (42%)
Two	7 (13%)

Three	5 (9%)
Four or More	5 (9%)
Prefer not to disclose	1 (2%)
Marital Status	
Single/not partnered	17 (32%)
Married	19 (36%)
Domestic Partnership	11 (20%)
Divorced	2 (4%)
Separated	2 (4%)
Prefer not to disclose	2 (4%)
Insurance Status*	
Medicaid	35 (66%)
Medicare	8 (15%)
Private Employer	8 (15%)
Subsidized Private Marketplace	2 (4%)
Safety Net Free Care	1 (2%)
Other	3 (6%)
Prefer not to disclose	2 (4%)
* Respondents were allowed to select multiple answers; therefore, the percentages may exceed 100%	

B. How does the context of pregnancy care influence interactions about vaccines?

Pregnancy is a unique and influential time for interactions with health care and health care decision making

First vaccine decisions: Pregnancy is a time when women may be making their first vaccine decision for themselves, as well as a time when they may be newly understanding their own responsibility for making health decisions for their baby and their family. This is a responsibility that many participants in our focus group cited, as well as something that professionals brought up as an important part of the context, and a key factor in their conversations with expectant patients.

> *One of the things not just about vaccines but I kind of thread through prenatal care is starting to trust and understand your own body and understand your maternal instinct. I think that all of these data inputs have contributed to people not understanding anything about themselves, because there's so much extra information and then people are like really anxious about every symptom, have no real concept about how to interact with a newborn, so kind of getting back to the animal brain of letting go of some of those inputs.* (KII 1745)

Pregnancy is therefore a unique time when patients are already thinking deeply about this and

other health issues. This therefore may be an opportunity for additional education about health in general, as well as an opportunity to change previously held, but maybe not very deeply considered, attitudes about vaccines in particular. As one focus group participant put it:

> *I didn't really think much about (vaccines), I didn't really have questions before I was pregnant and then once I got pregnant I definitely had questions."* (Focus Group 2)

These questions are tied closely to considerations around being or becoming a good parent and making healthy choices for their baby:

> *It's something that I always make sure I have, and I am on top of as a parent, so I deem it's necessary.* (Focus Group 2)

This can and sometimes does expand to pregnant people considering the vaccine status of family and friends who are going to be around the baby, especially during the first three months of life.

> *I did make everybody in my family get the Tdap vaccine. My daughter was preemie, so I did, anybody that wanted to see her in the first 3 months had to have the Tdap vaccine. So that is also not something that I normally would've done, but I did want to mention that as well.* (Focus Group 1)

This "bubble of protection" was also mentioned by professionals, but not frequently. Furthermore, their advising or changing the vaccine status of partners or grandparents is often hampered by systemic or logistical constraints, especially around billing or insurance if those family or community members are not themselves patients of the professional in question. However, it is important to note that focus group participants cited this rationale both for motivation to receive *as well as* to refuse vaccines.

Framing vaccines as an early choice a pregnant patient makes for the health of their baby, alongside education, can be effective in increasing uptake

Repeated interaction with pre/perinatal health practitioners over a relatively short period of time: Another significant factor that is unique to prenatal care is that many healthcare professionals in this context see patients consistently over the course of months. Unlike in many other primary care settings, this longer period allows for greater opportunities to discuss and provide education about vaccines and other health issues, as well as--very importantly--time to build rapport and trust between patient and healthcare professional.

> *So, there's probably eight opportunities to talk in depth about vaccines and I think sometimes we talk about it more if there's a current outbreak and sometimes, we talk about it less if there's no reason to. So, I don't necessarily talk about it every clinic visit, I just talk about the ones that are pertinent.* (KII 1760)

> *[My healthcare professionals have] been really helpful. They've been keeping in contact with me, sending me message, asking me questions and giving me information in general so I think that's just really helpful.* (Focus Group 2)

Many professionals reported that they document refusal or a request to delay, but that they may continue to return to the subject in subsequent visits until or unless the patient gives a firm refusal, or the professional believes returning to the subject may damage their therapeutic relationship.

> *We did get some refusals, and it is documented, the stated reason for refusal if any. Sometimes people don't want to give you a reason. But it's documenting their refusal, documenting the reason for refusal, offering additional information, and also referring them back to their provider.* ***Maybe it just takes a couple more times, a little more education*** *coming from a different provider to be able to provide solutions.* (KII 342)

Although the period of care is often longer and involves more frequent visits than in a primary care setting, professionals in the survey cited insufficient time as a barrier to discussing vaccinations with their pregnant patients (see Barriers section below). Additionally, KII's stressed that there are many things to attend to in each visit and that attempts to educate patients about vaccines must not come at the expense of the patient-professional relationship.

> *I just say okay. Because I just don't think that I'm going to change their mind in like the two minutes I have. I guess I would rather keep rapport with the patient, so they get adequate care.* (KII 1696)

C. What vaccines are pre/perinatal health professionals reporting they recommend?

As illustrated by Figure 2 and Tables 6-10, and as will be repeated throughout this report, we noticed discrepancies between different vaccines, particularly between Flu and COVID-19 (in the survey data above, especially COVID-19) on the one hand, and Tdap and RSV, on the other. In interviews, professionals said their uptake of COVID, and flu vaccines was noticeably lower among their pregnant patients relative to Tdap and RSV. Pregnant and recently pregnant people in the focus groups reported being more likely to refuse or delay those two vaccines, and it is evident in the survey data that professionals were also less likely to always recommend those vaccines.

Figure 2: Percentage of practitioner survey respondents that always recommend by vaccine type

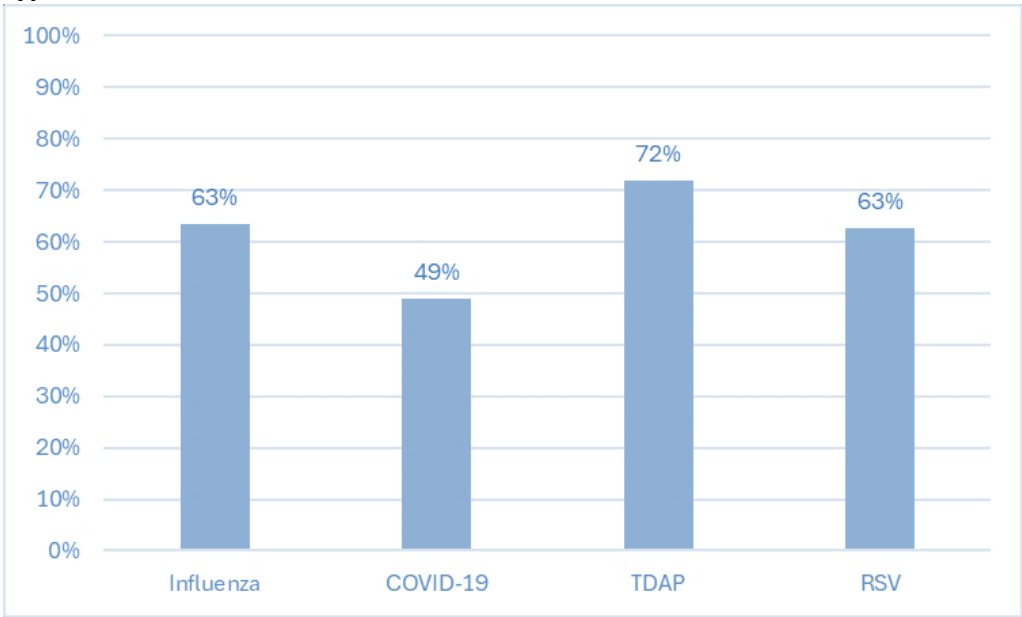


Table 6: Pre/perinatal health professional survey respondents that always and never recommend by vaccine type

Vaccine recommendation practices (n=135)									
COVID		**Flu**		**RSV**		**TDAP**		**Newborn Vaccines**	
Always	Never	**Always**	Never	**Always**	Never	**Always**	Never	**Always**	Never
49%	12.4%	**63%**	9.2%	**63%**	9.8%	**72%**	9.8%	**60%**	7.8%

Table 7: Beliefs and Practices Regarding COVID-19 Vaccine by Role

Current Role	n	Thinks Important	Thinks Safe	Thinks Effective	Always Recommend
Physician	42	74%	79%	71%	64%
Licensed Professional Midwife	37	49%	51%	51%	54%
Registered Nurse	28	57%	50%	54%	36%
Doula	15	60%	47%	53%	13%
Certified Nurse Midwife	12	67%	83%	75%	75%
Medical Assistant	8	38%	38%	38%	50%
Other	4	25%	25%	50%	0%
Physician Assistant	2	100%	100%	100%	50%

Licensed Practical Nurse	2	0%	0%	0%	0%
Pharmacist	2	50%	50%	50%	50%
Advanced Practice Registered Nurse/Nurse Practitioner	1	100%	100%	100%	100%

Table 8: Beliefs and Practices Regarding Flu Vaccine by Role

Current Role	n	Thinks Important	Thinks Safe	Thinks Effective	Always Recommend
Physician	42	86%	86%	76%	83%
Licensed Professional Midwife	37	43%	62%	49%	59%
Registered Nurse	28	68%	75%	68%	68%
Doula	15	60%	53%	53%	13%
Certified Nurse Midwife	12	92%	100%	83%	67%
Medical Assistant	8	63%	63%	63%	75%
Other	4	50%	50%	50%	0%
Physician Assistant	2	100%	100%	100%	50%
Licensed Practical Nurse	2	50%	50%	50%	50%
Pharmacist	2	100%	100%	100%	100%
Advanced Practice Registered Nurse/Nurse Practitioner	1	100%	100%	100%	100%

Table 9: Beliefs and Practices Regarding Tdap Vaccine by Role

Current Role	n	Thinks Important	Thinks Safe	Thinks Effective	Always Recommend
Physician	42	90%	93%	90%	93%
Licensed Professional Midwife	37	59%	65%	68%	70%
Registered Nurse	28	82%	82%	75%	71%
Doula	15	60%	53%	53%	13%
Certified Nurse Midwife	12	92%	100%	83%	100%
Medical Assistant	8	75%	75%	75%	75%
Other	4	50%	50%	50%	0%
Physician Assistant	2	100%	100%	100%	50%
Licensed Practical Nurse	2	100%	100%	100%	50%
Pharmacist	2	100%	100%	100%	100%

Advanced Practice Registered Nurse/Nurse Practitioner	1	100%	100%	100%	100%

Table 10: Beliefs and Practices Regarding RSV Vaccine by r Role

Current Role	n	Thinks Important	Thinks Safe	Thinks Effective	Always Recommend
Physician	42	79%	76%	74%	83%
Licensed Professional Midwife	37	51%	51%	62%	70%
Registered Nurse	28	68%	64%	61%	50%
Doula	15	60%	67%	53%	13%
Certified Nurse Midwife	12	75%	83%	75%	75%
Medical Assistant	8	63%	50%	38%	75%
Other	4	50%	50%	50%	0%
Physician Assistant	2	100%	100%	100%	50%
Licensed Practical Nurse	2	100%	100%	100%	50%
Pharmacist	2	100%	50%	50%	50%
Advanced Practice Registered Nurse/Nurse Practitioner	1	100%	100%	100%	100%

We also observed some variation in vaccine beliefs and recommendations by professional role. Many of these cell sizes are small, and we should not draw conclusions about the practices of all healthcare professionals based on these responses, but they are suggestive of trends.

It may be worth highlighting that medical assistants in our survey tended towards less firm recommendations around the COVID-19 vaccine. Again, this cell number is small, but it may be important because in many settings it is medical assistants who are first broaching the topic of vaccines with patients, and who are ultimately responsible for administering them. Therefore, educating medical assistants about these vaccines and ways to discuss them with patients may have an outsized impact compared with, for instance, educating physicians.

Our survey was unique in that we did not restrict it to respondents of a particular professional role. The percentage of doulas who always recommend the COVID-19 vaccine is notably low; this is unsurprising because vaccine administration is outside the scope of practice for doulas, although we also see doulas expressing low confidence in the COVID-19 vaccines.

D. What are pregnant people reporting they are offered and able to access when it comes to vaccines?

Many pregnant or recently pregnant people in our focus groups reported that they felt they were given all the information they needed to make decisions about vaccines, and that they were able to access them easily.

> *Yes, they offered them to me, and I got them. And yes, they explain everything very well to you, and I even have that little sheet, yes that's very nice…the information was enough. They inform you very well here.* (Focus Group 6)

However, some people, reported that they had not been offered any vaccines or particularly had not been offered or educated about flu and COVID-19 vaccines, during their pregnancies. This experience was more commonly reported in our Spanish-speaking focus groups than in the English-speaking focus groups.

Some focus group participants reported that they were offered vaccines-- sometimes more than once--but did not feel they had received sufficient information from their care team to feel comfortable making an informed decision.

Few participants in our focus groups reported that being unable to access the vaccines was a barrier. In other words, everyone who wanted them had been able to access them. However, we did hear from some professionals that systemic and logistical issues regarding storage and insurance reimbursement do affect their ability to conveniently provide vaccines to their patients.

E. What are the reasons for acceptance or refusal of vaccines in pregnancy?

Theme 1: Prioritizing Baby

The commitment of expectant patients to the health and safety of their fetuses was a primary theme in both our interviews with professionals and our focus group discussions with pregnant and recently pregnant people. Vaccines that are seen as having primarily neonatal benefit (Tdap and RSV) had much higher acceptance than those that are considered to benefit the pregnant person (Flu and COVID-19).

Professionals reported emphasizing the benefits of vaccines to the health of the baby, as well as the risks to the baby of not vaccinating, as a successful strategy to convince hesitant patients to accept prenatal vaccines.

> *I do explain that a lot of the vaccines aren't actually for the patient themselves but to protect the baby, especially for the first six months of life.* (KII 1918)

Calling attention to current outbreaks of whooping cough or RSV, particularly if they had been in the local news, was a way to reinforce this message.

> *The RSV, mostly people have been really excited about that [vaccine], because pretty much everyone has heard stories of how scary RSV can be in little babies.* (KII 1317)

Similarly, pregnant people in our focus groups reported strongly considering the health of their babies when making decisions about vaccines.

> *If they tell me "I will give you all this so that the baby is OK, or both are OK," I will accept whatever I am offered. (*Focus Group 5)

> *But since then, I think I've been a little bit more vaccine friendly and open to it, just because I just want to protect myself and the baby.* (Focus Group 4)

Both patients and pre/perinatal health professionals reported that pregnant people are frequently told to be aware of what they are putting in their bodies—to remember that what they consume goes to the fetus as well—so being asked to get a vaccine can seem surprising or incongruous in the face of these other recommendations.

> *My biggest concern is how would my baby react with the vaccines. Like the first time she got her vaccines for her two-month… it was a lot of vaccines so I was just worried about how they would react to all of those in her little body.* (Focus Group 1)

This tied in with issues of misinformation (a theme we return to below), because several patients reported concerns about chemicals or high aluminum levels in vaccines negatively affecting the fetus or baby.

> *My first concern was my baby's health, because like I said without much information you don't know what is safe and what is not safe. So, for not knowing how safe it is for my baby's health I chose to say no most of the times.* (Focus Group 1)

Theme 2: Flu and COVID-19 are seen as less important and/or more problematic

All our data sources consistently showed that flu and COVID vaccines were lower in terms of both uptake and being offered as compared to Tdap and RSV. Particularly in our Spanish-language focus groups, several participants reported that they had not been offered the flu and/or COVID-19 vaccines during their pregnancies. The professional survey data echoes this account, where these vaccines were reported less likely to be offered than RSV and Tdap.

Other participants reported they did not consider flu and COVID-19 to be serious or dangerous diseases. "I just have never felt the need to get the flu shot" (Focus Group 4). Professionals also reported hearing this attitude very commonly among their patients who refused these vaccines. Additionally, these vaccines were seen as less effective:

> *I didn't really have concerns about any of the vaccinations. I just didn't feel like I needed to get the COVID or the flu vaccine. Even though I do get sick often, I didn't feel like it would help me to not get sick again.* (Focus Group 4)

As mentioned above, these vaccines were also seen as primarily "for" the pregnant person; in other words, their benefit to the health of the baby is seen to be minimal.

Among people in our focus groups who were hesitant or refused to get the COVID vaccine, some cited the vaccine's newness as a concern.

> *Because I already got two COVID shots actually, but I don't think I want to move forward again with getting more COVID shots, because it's still so new."* (Focus Group 4)

Emphasizing the benefit of flu and COVID-19 vaccines not only to the pregnant person but also for the health of their baby and pregnancy

The COVID-19 vaccine in particular is surrounded by a great deal of skepticism due to politicization, as well as a perceived deterioration of trust based on its rollout.

> *I think the COVID vaccine, all of the mandates around getting the COVID vaccine, which personally I think were indicated, but I can understand why people were upset about that.* (KII 1696)

In interviews, professionals told us it is often much harder to change the mind of someone who refuses COVID-19 or flu than to change patients' minds about Tdap and RSV.

> *So pre-COVID for most people I would spend a little bit more time on - if someone was hesitant about vaccines, I wouldn't press it in that moment but I might ask a few times over the course of a few visits, and what I found doing that, especially with the COVID vaccine - I think the COVID vaccine unfortunately was more politicized than any other vaccine has ever been - but because people would become visibly angry if I continued to ask, I now ask once a visit if it is appropriate and unless they indicate they are still thinking about it, I don't ask again. Whereas I usually would have before.* (KII 1757)

Theme 3: Tdap and RSV are important and less controversial

Tdap and RSV vaccines had much higher uptake rates as compared to flu and COVID-19. This theme came across clearly in the focus group discussions and professional interviews. These two vaccines were also more likely to be offered, according to our survey data, compared with flu and COVID-19.

> *The RSV, mostly people have been really excited about that, because pretty much everyone has heard stories of how scary RSV can be in little babies*. (KII 1375)

> *So, before I got pregnant, I hadn't gotten vaccinated in a really long time. I also refused the COVID vaccines and flu shots. So, I kind of was against vaccines, but when I got pregnant, I talked to my doctor, and I realized that some of them are really important like the Tdap vaccine is the one I just got.* (Focus Group 2)

In addition to neonatal benefit, Tdap uptake benefited from being seen as old, and therefore safer and more trusted. Focus group participants discussed the fact that their mothers had received Tdap vaccines when they were pregnant, and that they themselves therefore felt less hesitant regarding that vaccine in particular. This was a pattern the key informant professionals observed, as well:

> *Yeah, Tdap is a really great example. Most patients, even those that are hesitant for vaccines, will use Tdap. It's really interesting, they'll take Tdap, but they'll decline COVID for example. They'll say oh, Tdap's been around forever and it really isn't for me, it's for the baby so I'm willing to do Tdap.* (KII 1918)

People in our focus groups were also more aware of the risks of pertussis to their newborns, a fact that professionals capitalized upon when making recommendations.

> *And then I have pretty much universal acceptance of Tdap once I kind of talk through what's happened in Washington, that there's an increase in patients with whooping cough. I feel like pretty much every one of my patients will do it.* (KII 1736)

Similarly, RSV is a disease many pregnant people have heard of or had seen older children or relatives suffer through. In recent years, Washington state has had high rates of RSV, a fact that local newspapers frequently report on. This translated, from professionals' perspectives, into not only acceptance of this vaccine but enthusiasm for it.

The fact that RSV has been in the news was thought to lead to greater uptake of the vaccine

Theme 4: Personal lived experience affects decision-making

People's own lived experiences, and those of their families and friends, were often influential in their decisions regarding prenatal vaccinations.

People who had immigrated to the US from other countries often compared their experiences with healthcare and prenatal care in their home countries to their experiences in Washington.

Participants in our Spanish-speaking focus group were appreciative of the shared decision-making framework that doctors in the US tended to employ rather than a more didactic approach. Yet participants from other countries also reported that there were many more vaccines recommended in the US as compared to their home countries, contributing to

skepticism. Cultural groups and communities had a strong influence on people's health decisions, both in terms of encouraging uptake and increasing hesitancy.

Professionals also took the specific histories and lived experiences of their patients into account when making vaccine recommendations.

> *If you're in a religion or part of a religion that does not endorse vaccines, that is just what it is."* (KII 1757)

> *I do hear from some Black clients a general mistrust in the medical system based on experiments that have been done on Black populations, so I really understand that sort of hesitancy.* (KII 1317)

Lived experience comes into play as well regarding how people view vaccines and the illnesses they protect against. As mentioned earlier, people often consider flu and COVID-19 not to be serious illnesses, often based on their own experience or that of friends and family who have had these illnesses and have not gotten severely sick. Further, the flu and COVID vaccines are seen as less effective by those who have fallen ill after receiving the vaccine.

This same reasoning was apparent in participants' tendency to accept the RSV vaccine. Many had experience with the babies of friends or family having gotten RSV before the vaccine was available.

> *I also got the RSV shot which was new to me because when I was pregnant almost two years ago with my oldest and my oldest son, they didn't have that vaccine…and my oldest son got RSV so that was pretty scary having a small kid with RSV. So, I am glad I got it this time around.* (Focus Group 2)

In interviews, professionals also reported that discussions and recommendations regarding vaccines should be influenced by patients' medical histories, as well as the ways in which patients' lived experiences shape their health decisions.

> *Sometimes people have had some really bad experience so their personal history, I did have a patient who had a bunch of pregnancy losses. They occurred within short durations after she got a vaccine, kind of in the – and she's a public health nurse and really was strongly, she was like I will get them all the day after I deliver, but if it's okay, can you just respect my decision not to get them during pregnancy? I was like you know, that's great, just wear a mask wherever you go and don't go to big events, you'll probably do fine. She agreed, she got all of them, she got like four or five shots postpartum because she was willing to kind of accept them. So based on somebody's personal history, their pregnancy history, we will negotiate a different plan that then is the medically recommended plan, just so that we can keep that therapeutic relationship. I do think it's not worth burning my therapeutic relationship with a patient over the recommendations.* (KII 1760)

I think vaccine is important, I am pro vaccine because my daughter she's scared of vaccine, so she did not get her flu shot and one time she got very sick, and I did not. I don't know, so I took her to the emergency, and they found out she got flu. And so now she knows that she needs to get vaccine otherwise she can get flu or other disease that she's not protected through vaccine. (Focus Group 4)

F. What strategies are professionals using with pregnant people who are hesitant?

Theme 1: General approaches to offering vaccines and addressing hesitancy varied

In both the KIIs and focus groups, it was clear that professionals use a range of approaches to offering pregnant people vaccines. Three primary approaches emerged that align well with existing literature. These approaches were 1) offering vaccines and letting patients accept or reject them, 2) a presumptive approach, which involved announcing that a vaccine is due, and 3) a motivational interviewing or shared decision-making approach. Each of these are further explored below.

Offering information and letting people make their own choices (shared decision-making): One of the most common approaches to vaccine hesitancy and refusal was to offer information. Both in the survey (Figure3) and KIIs, there were professionals who indicated that they offered or asked people if they would like the vaccine and then dropped the issue if the patient said they were not interested. Nearly a quarter (24%) of survey respondents indicated they dropped the subject and moved on.

I will say it probably changed since COVID, just because I think we all had a little trauma around COVID vaccine counseling, which I'm happy to talk about. I think now my approach is to present what is recommended and if a patient says, "absolutely not, I'm not going to get the vaccine," I will ask why once, but if it's "I just don't know, I'm not sure," I will provide information. But if it's "I don't believe in vaccines," I have found that it is generally not worth the however long it's going to take to try to convince them, because they usually are not - at least at this point they're often not convinced. They've been asked many times, so I just move on because I also need to generally continue to take care of this patient, and don't want to ruin our therapeutic relationship. (KII 1757)

KII respondents referenced documenting refusal in the EHR to ensure that it was not raised again:

It's simply documented in their nursing notes; there's nothing extra that I would do. I think people, when they have made a decision about a vaccine, you can sense they're

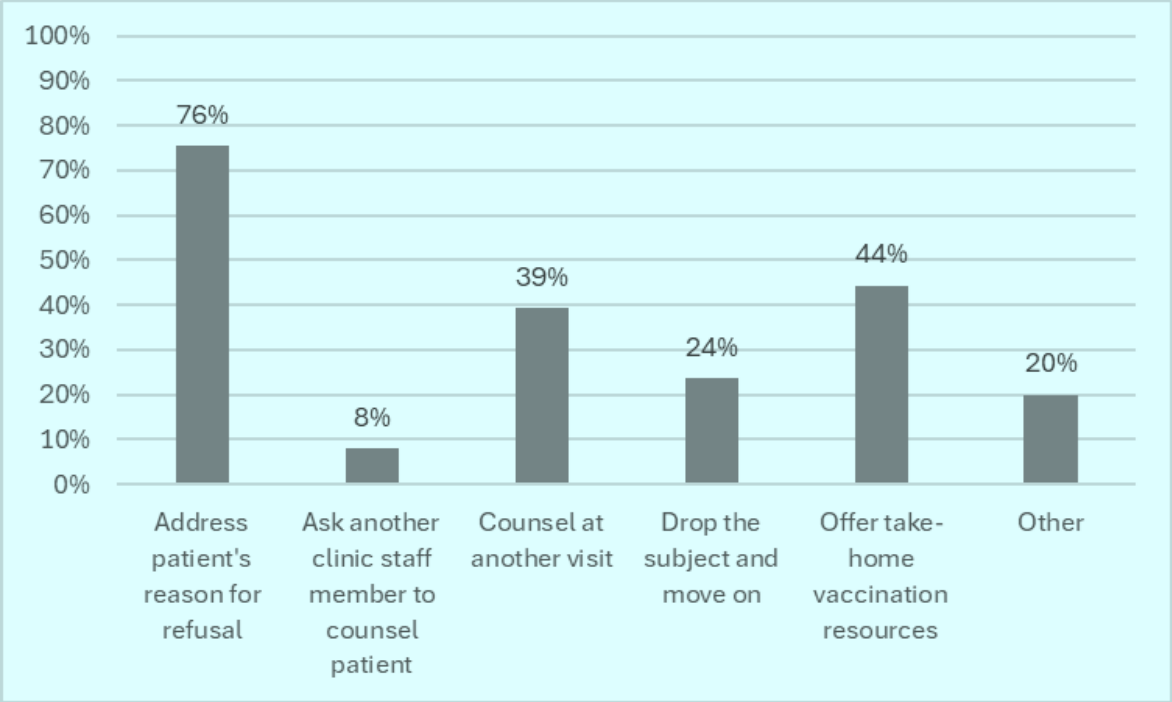
kind of stuck and they're not willing to move - even talking about it or bringing it up is a negative in the relationship. (KII 1669)

I give it two times and I'm like okay, I'm going to just document that you're declining. And I'll say that out loud. (KII 687)

For some KIIs, the amount of information provided may have been at a level to be considered shared decision-making, as they tried to offer as much information as possible and counter misinformation. This was distinct from a motivational interviewing approach, which focuses on understanding and addressing the specific concerns or beliefs of an individual.

I think explaining why it's recommended. People do respond to that. I kind of wonder if people are on the fence, or it's another thing for them to do so then when they know the why, then they can have a little more reason to make the effort, because it's going to be a separate trip for them. (KII 1696)

Figure 3: When a pregnant patient declines vaccinations at a visit, how do you respond?



Presumptive approach: Other professionals used a presumptive approach, which is an evidenced-based technique that involves informing a patient they are due for a vaccine, operating under the presumption that they will accept the vaccine, which is true for the majority of people. Opel et al. (2015) found that asking if someone would like to get a vaccine actually opens the door to increased hesitancy and reduces the number of people agreeing to vaccination. [1–3]

I just tell when whatever vaccine is recommended, and usually there's no resistance or

questions at all. (KII 1918)

I usually use a presumptive approach. I say "it's routine that we give these vaccines during pregnancy just like we draw your blood to screen for a wide variety of different diseases every pregnancy. in the same way we test for diabetes every pregnancy and these are the standard vaccines we give. (KII 2026)

I think my approach in general with vaccines is approaching it as almost an opt-out kind of situation, where "We're going to do your Tdap at this visit - do you have any questions about that?" as an example. (KII 437)

Motivational Interviewing: Another general approach is presenting information about the fact that a vaccine was recommend and why, and then exploring concerns when patients continued to have them. This approach was used by some professionals as a starting point.

But if I don't know where they're at I'll approach it with curiosity and be like, are you familiar with the vaccines that are recommended in pregnancy? (KII 687)

I think the first thing is to listen. First, listen and see why, what the hesitation is. Have that open conversation because that conversation did come up a lot during COVID. What are your hesitations with it? Trying to figure out what the real reason is. (KII 342)

The motivational interviewing approach was also paired with the presumptive approach and used only with hesitant patients.

…I always advise patients when I recommend vaccines, why I'm recommending them, what the benefit is, and if they say they'll think about it or they don't want it, I'll lead with inquiry. (KII 1918)

Theme 2: Leveraging repeated contact

The longitudinal and ongoing nature of prenatal care was raised in interviews and in the survey data above when professionals responded that they would continue to bring up the subject at subsequent visits. Because patients often see their care team many times over the course of pregnancy, professionals recognized that even if a patient was hesitant once to receive a vaccine, they may be willing--with more education and information--to receive it later on. This allows professionals to take advantage of the relative frequency with which patients come in, as well as the relationships and rapport they build with them, to continue to encourage vaccine uptake.

It takes a lot of talking, a lot. It's such a win for me because they're kind of anti-vaccine about a lot of things. I do home visits too, it's not like a clinic visit, but I feel my services and my interaction are so much more meaningful because it happens in a very comfortable kind of environment, it's more of a conversation. I'm not busy typing into my computer, looking up this, or doing all of that. It is a knee-to-knee, eye-to-eye

conversation and we just talk about why they don't want to do it, and best practices. We talk about that they're doing all these great things to have this great healthy baby and child, that we want to protect that child. (KII 1669)

Both professionals and focus group participants mentioned that the subject would often be brought up at multiple visits. Professionals reported they might continue to recommend vaccines until a patient told them firmly that they were not interested and did not want to discuss it further.

I've definitely had good success with the people who fall in the middle after educating them or sending them resources, that they'll come back to their next visit or let us know in between visits like "I did go receive" whatever vaccination. (KII 687)

Patient perspectives on this tactic varied but were generally positive. Many patients felt empowered that the decision was up to them and appreciated being given time to consider. Some patients, however, felt pressured by members of their care team.

Theme 3: Avoiding an all-or-nothing approach

In interviews, several professionals discussed avoiding an all-or-nothing approach when it came to counseling their patients about prenatal vaccinations. Mirroring a theme observed earlier, professionals recognize that a patient may refuse some vaccines (especially flu and COVID-19) but remain open to others.

I think they hear Tdap and a lot of them only think of tetanus, and they're like my baby's not going to get that, so that's unnecessary. And then I go no, I actually care way more about the "P" [in Tdap] and then we go through that. I'd say multiple times, specifically in breaking down what that is, and letting people know they don't have to go get other ones as well if they just want the Tdap. But please at least get – I'd love you to get whatever are willing to get, you know what I mean? (KII 687)

Another professional gave an example of a patient who was very vaccine hesitant and had a husband who was strongly anti-vaccines, but the professional was able to work with the patient to get one of the four recommended vaccines.

…she declined all vaccines completely at the face because vaccine is a very dirty word, I was trying to ask why. But she ended up getting her whooping cough vaccine and I thought that was a huge success. (KII 1918)

While supporting patients to get all the recommended vaccines during pregnancy is the desired outcome, it is important that professionals are able to feel successful in cases where patients were hesitant to receive any vaccines but were ultimately willing to receive at least one of the recommended vaccines.

Theme 4: Tailoring to an individual's circumstances

Professionals also discussed tailoring their approach to the patients' specific risk profile. If a patient is experiencing a more high-risk pregnancy, or they cannot mitigate their exposure by other means, professionals were more likely to strongly emphasize the importance of vaccines. On the other hand, professionals may take a different approach if the pregnant person has few health risks and it is an uncomplicated pregnancy.

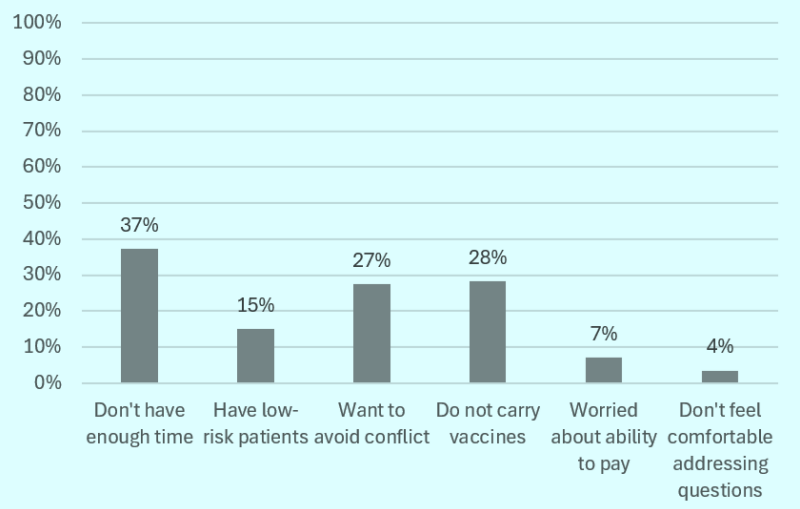
> *I'll sometimes talk about things like you know your baby's going to have a NICU stay, it's especially important – I try and find something in their clinical history that is a reason why they in particular should consider immunizations for their baby. So, if we're anticipating a preterm birth or if they are delivering a baby who may have some lung disease, I will talk about that, babies that have a diaphragmatic hernia, I'd be like it would be really hard on your baby to get a respiratory infection.* (KII 1736)

G. What are the Key Barriers to Discussing Vaccines During Pregnancy?

Barrier 1: Lack of time

Although prenatal care often affords more and repeated opportunities for vaccine discussions compared to other kinds of healthcare, time for these kinds of discussions is viewed as limited. Lack of time or time pressure in appointments was endorsed as the primary barrier to discussing vaccines by professionals in our survey (Figure 4).

Figure 4: Barriers to discussing vaccines, provider survey (n=113)



Some focus group participants also said they felt they did not have enough time to discuss vaccines with professionals, or that their care team had not offered to discuss them but simply provided them with the recommendations without a detailed conversation.

Patients who felt they did not have time to ask questions or were unsatisfied with their care team's responses sometimes contributed to erosion of trust in the patient-professional relationship.

I've asked the doctors before and there was a time where he just pulled up the computer and literally Googled it. Like I could've done that. There's really no trust right here, so that's where I was kind of iffy about all that stuff. *So, I actually stopped giving my kids a few vaccines, like the flu and COVID, I haven't given those to my kids for years and they seem to be fine. But you know that's because of the trust or not the trust, I don't really trust doctors much, just because they decided to do that in front of me.* (Focus Group 3)

Barrier 2: Desire to preserve rapport

Many professionals talked about "picking their battles" when deciding how strongly to recommend vaccines and recognizing that they needed to preserve a therapeutic relationship with patients, as vaccines are only one of many topics they need to address with pregnant patients.

*I just say okay. Because I just don't think that I'm going to change their mind in like the two minutes I have. I guess I would rather – it isn't a conscious choice. I would rather keep rapport with the patient, so they get adequate care. (*KII 1696)

Barrier 3: Challenges addressing information needs & countering misinformation

Pregnant people want information: A hunger for more, and more detailed, information about vaccines was a theme that we heard, particularly in our English-speaking focus groups. Participants both reported feeling overwhelmed by the volume of information about vaccines and being unable to find the kinds of information they wanted in their professionals' offices and elsewhere.

Challenges answering specific questions and countering misinformation: Professionals by and large felt they had the information and knowledge they need to discuss vaccines with their patients. However, a few mentioned that it was difficult to answer some of the more granular questions that sometimes came up--particularly with patients who were hesitant--regarding things like specific ingredients in the vaccinations. One professional mentioned that they were sometimes unable to find scientific answers to specific questions, for instance related to differing recommendations for vaccines based on unusual medical conditions specific to the patient. A small number found the RSV vaccine recommendations to be confusing, particularly around timing, and especially for patients with a high likelihood of delivering early. Several mentioned a desire for more clear educational materials that are inclusive and specific to vaccines during pregnancy.

I think it's been really difficult for me to look more into the vaccines because again I think [S] was saying google is more opinionated that facts a lot of the time. And I don't want to go based off of opinions I want to go based off of facts. And I feel like again it's a little bit hard to make that decision and then finding out if it's true or not. So that's kind of been difficult, just because again I want to do the best thing, but I don't have 100% all the information that I need. (Focus Group 2)

Misinformation and social media, and the interplay between them, came up repeatedly in both focus group discussions and professional interviews.

The influence of social media: Pregnant and recently pregnant people in our focus groups often expressed skepticism around the trustworthiness of social media as an information source:

> *And then just reiterate what other people said, like you can't always rely on what you see on TikTok or Facebook or anything like that. Anyone can post on there and it's not always beneficial information.* (Focus Group 4)

Yet focus group participants also endorsed the influence these sources had, even as they saw them as untrustworthy.

> *I think for me what veered me away is there's a lot of biased information on the internet. And when I scroll through my Facebook or something I see a lot of stories about, like horror stories about their kids' getting vaccines and then they either get really sick or pass away or I don't know if any of those stories are even real. Some of them might be, but I think a lot of it comes up pretty often. I don't know why because I don't think I click on it. It's just since I've been pregnant, I've seen a lot of weird horror stories about vaccines on the internet. So, I guess it somewhat psychologically gets to me without me realizing.* (Focus Group 2)

All professionals interviewed said that patients quoting misinformation they had heard on social media was rampant and a leading cause for vaccine refusal.

> *I think there is an insane amount of access to information right now and that information has no vetting on accuracy or inaccuracy.* (KII 1745)

> *I think there's just a lot of vaccine distrust among American culture of people just having a lot of misinformation from leadership and people in trusted positions.* (KII1736)

Now it's pervasive and it's exhausting honestly, professionally, just because social media and friends and different things like that have so much influence and it's so easy to find misinformation. (KII 1669)

> *Like, for example, if I need... if I need a vaccine, I prefer to go to the clinic, talk to the doctor to see what really... what consequences it would have, or if it is really effective for what my body needs, or something like that. I actually always consult it with the doctor, it's very rare that I ask, I don't know... for example, my mom, doesn't have much experience she would tell me better go and consult it with the doctor because I can't tell you if it's good or bad, better go. And that's what I do; I always go to ask.* (Focus Group 6)

Professionals often felt that people don't actually want information. Professionals reported that patients came in already having decided what sources of information they trusted and whose recommendations they were going to follow. If the professional can become that trusted source, they may have success in overcoming hesitancy. However, the belief was that it's not about presenting more data or more information.

> *I don't find that pamphlets or more data are really what people are needing or wanting, it's more of an emotional or a visceral question, as opposed to 'I need the facts about why this is safe.' If they're questioning that and they trust me, and I tell them, then that's enough. But yeah, more pamphlets are not the solution, in my experience* (KII 437)

> *But what's interesting, it doesn't really matter anymore if you even try to quote knowledge. People are so emotional about vaccines, about getting caught up in some of this, that it's exhausting, it really is. So, I was very interested in contributing to this because I just hope my information will help this word get out more, and people will be more receptive to vaccination.* (KII1669)

H. What are the Key Barriers to Accessing Vaccines During Pregnancy?

Barrier 1: Not being offered vaccines

The biggest barrier observed among focus group participants regarding accessing vaccines was simply not having been offered them.

> *Well, never in my pregnancy appointments, or anything, have they ever talked to me about vaccines or if I have to get a vaccine or something.* (Focus Group 5)

> *Yes, during my prenatal visits I wasn't offered vaccines. I didn't know those vaccines existed until I was already there in the hospital*. (Focus Group 6)

Most people reported that if they wanted vaccines, they had no difficulty accessing them or having them paid for by insurance.

Barrier 2: Not having vaccines available to administer during visits

While many professionals in both the survey and the KIIs reported having vaccines available to administer on site, several who worked in smaller practices or unconventional practices (e.g., visiting patients at home) were not able to offer to administer vaccines during visits with pregnant patients.

> *We don't stock adult COVID vaccines here at my current clinic, so that has always been a barrier. I think a lot of my patients don't get COVID vaccines because of that.* (KII 437)

The midwives reported that their practices did not have funding to buy the correct storage equipment and could not order vaccines in small enough quantities to meet their demand.

Public health nurses who see patients at home reported being unable to travel with vaccines. For them, as well as for the other professionals who could not carry vaccines in clinics, this meant that their patients had to go somewhere else--usually a pharmacy or another doctor's office--to receive vaccines. These professionals understood this as a substantial barrier, causing issues for people in terms of time, insurance coverage, and transportation.

> *Not every pharmacy accepts all insurance, so some people, especially for the RSV, have had to go to a few different pharmacies and that's just difficult in people's busy lives.* (KII 1317)

> *I think better vaccine availability…generally at pharmacies across the region, because we do have some people that either we see on telehealth or traveling from far away or who are like 'I don't feel well enough today, I don't want to do it today, I'm happy to do it, but can I do it locally?' and then they're like 'I went into my local pharmacy and they don't have it or they won't do it.* (KII 1757)

> *Unfortunately, misinformation and distrust of the health care system right now feels like the biggest barrier. (KII 437)*

Table 11 details which work sites has vaccines available and which did not.

Table 11: Which vaccines are carried by clinical setting

Clinical setting	Covid	Flu	RSV	Tdap	Other Vaccines	Total Respondents 'n'
Clinic, Women's Health	1	1	1	1	0	1
County Health Department	0	0	0	0	1	1
County health department	1	1	0	1	0	1
Dental Office	0	0	0	0	1	1
Home Visiting	0	0	0	0	1	1
Hospital	17	23	21	20	3	27
Local Public Health	0	0	0	0	1	1
Medical Group/Health System (such as Kaiser, Providence, Swedish)	10	13	12	13	0	13
Midwifery Practice/Birthing Center	2	7	2	10	7	18
On campus University student clinic	1	1	1	1	0	1

Pelvic Physical Therapy Outpatient Clinic	0	0	0	0	1	1
Pharmacy	2	2	2	2	0	2
Private Practice	0	1	0	1	8	10
Public Health	0	0	0	0	1	1
Public health- home visiting nurse	0	0	0	0	1	1
Rural Health Centers	1	3	2	3	0	3
Self-Employed/Volunteer	0	0	0	0	3	5
Serving underserved populations	7	7	6	7	2	9
Tribal Health Center	1	1	1	1	0	1
WIC Nutrition Program Clinic	1	1	0	0	0	1
Family Medicine	1	1	1	1	0	1
Home Health	0	0	0	0	1	1
Nurse Home Visiting	0	0	0	0	1	1
Public Health Nurse	1	1	1	1	0	1

I. Who do pregnant people and professionals rely on for information?

Theme 1: Pregnant people still see health professionals as a trusted sources of information

Despite challenges pregnant people face sorting through information sources and determining what is misinformation, when asked about trusted sources of information, many focus group participants endorsed their healthcare professionals as a key trusted source, and reported that they had had time to discuss vaccines with their care team and felt that they had received all the information they needed:

> *I was offered my shots by my OB. She explained each shot, um… what it protects… and I felt like that was enough information to feel comfortable with what I was getting.* (Focus Group 4)

> *So really when they give you information about why they are given and why they are providing them to you, it makes you feel more secure and say and know that you are making the right decision, which is for something good.* (Focus Group 5)

Echoing professionals about the influence of community on vaccine and health decisions, many participants also said they turned first to friends and family members when they had questions or concerns about vaccines:

> *Also, my aunt that I am very, very close with, she's more like a mom to me, is a nurse.*

And so, she's also my go-to for everything. (Focus Group 4)

I just want to second what [another participant] was saying, my go to for information especially about kids is my mom and the women in my life who have had children. (Focus Group 1)

For focus group participants who discussed looking information up online, some of those who said they did not trust social media or Google turned to research papers, the CDC website, and other .gov sources, so that I know that they're certified research that's been checked over and approved of. (Focus Group 2)

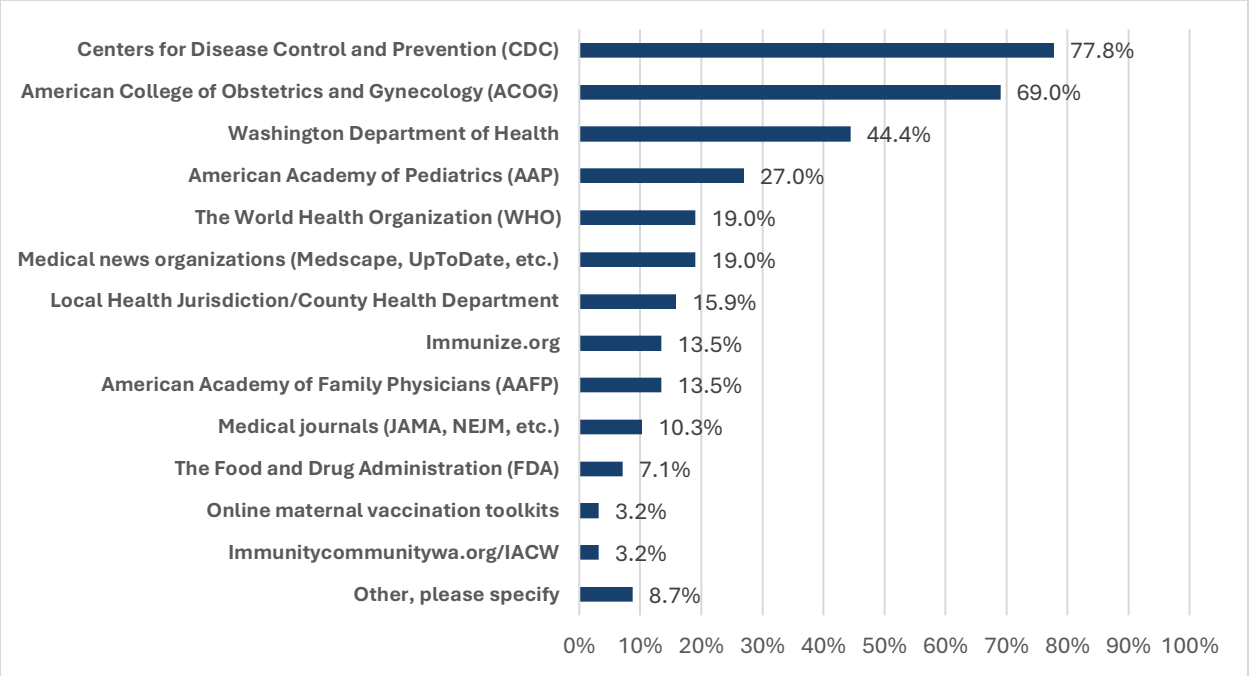
I felt like something super empowering for me was to actually do the research myself. And not just do it, my midwife was like hey we have this vaccine. I mean it did, I can totally also confirm with like [S3] it does feel like they just tell you, you know, and if you don't ask questions it's just like you're just going to get the vaccine and if you're a first time mom and you're just going into your appointment trying to do whatever is protocol you're probably just going to get the vaccine and not really question it. So, I think with all the research that we do have and the information I think people are starting to look into things more. And I think it's good for every mom to do that for herself and for her baby, build that confidence. (Focus Group 1)

COVID, well. I don't know, there are many things said about COVID shot, right? Yes, I have got all of them, all the COVID shots when it was part of the pandemic. I have them all, also the boosters, but now many things are said, that it shouldn't have been given and so on, so I really don't know what the truth is. (Focus Group 5)

Theme 2: Professionals accessed information from a variety of resources

Pre/perinatal health professionals accessed information from a variety of sources (Figure 5) with the top three being the CDC, ACOG, and the Washington DOH. Given changes on the national level, these findings point toward needing to continue to diversify where professionals go for information.

Figure 5: Source of information accessed by providers



J. What recommendations did respondents have for improving information, access, and/or uptake of vaccines?

Recommendation 1: Build/increase trust between individuals, communities, and healthcare professionals.

Both focus group and interview participants highlighted the importance of building and rebuilding individual and community trust with healthcare professionals.

> *All of our recommendations, vaccines being one of them, is taking time and building rapport and relationship. When someone feels like they can trust you and medical providers become a trusted source for information and not an adversary, then people are going to be more likely to listen to their recommendations.* (KII 1745)

While many of our focus group participants reported having a trusting relationship with professionals, others did not trust the recommendations they got from healthcare professionals and wanted more information and education from them. Improving trust in individual patient-professional relationships, as well as addressing broader issues of mistrust of the medical

profession, may help alleviate some vaccine hesitancy.

Recommendation 2: Improve the information available to pregnant people and their families

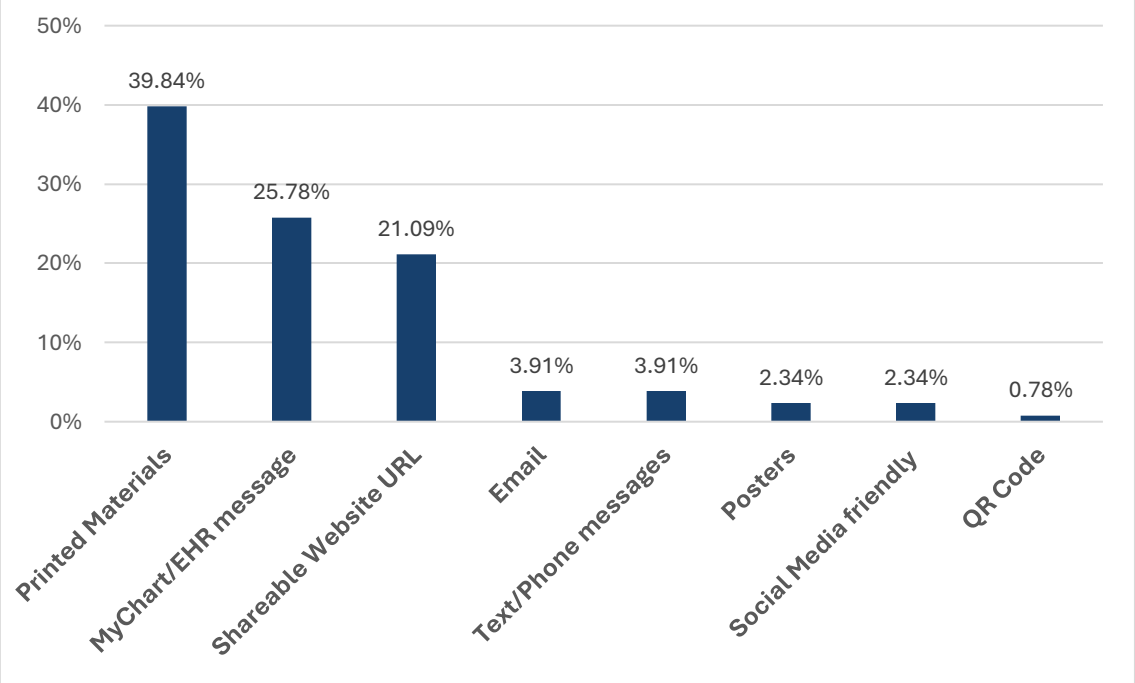
Closely related, both professionals and pregnant people wanted better pregnancy-focused vaccine information. In our survey (Figure 6), 1/3 of respondents indicated that printed materials were their preferred format for offering vaccine resources/information to patients, making printed materials the most preferred format, followed by electronic chart messages and shareable websites. In interviews, professionals expressed the desire for simpler shareable pregnancy-specific vaccine information:

> *I do wish there was a very brief pamphlet that we could give people when they walk in the door, just like you have a pediatric vaccine schedule, here is your pregnancy vaccine schedule. I have never seen that exact resource on ACOG or anything else.* (KII 1760)

> *To me, I wouldn't mind one handout that briefly discusses all the recommended vaccines in pregnancy, and maybe just pregnancy specific language and considerations for some of the ones we discuss more often"* (KII 2026)

And, while many focus group participants were satisfied with the vaccine information sheets, others did want more specific and more detailed information--especially related to the prenatal vaccine schedule--that highlighted data and recommendations specific to pregnant people:

> *About information regarding the vaccine, I would like to know why this week, in the*



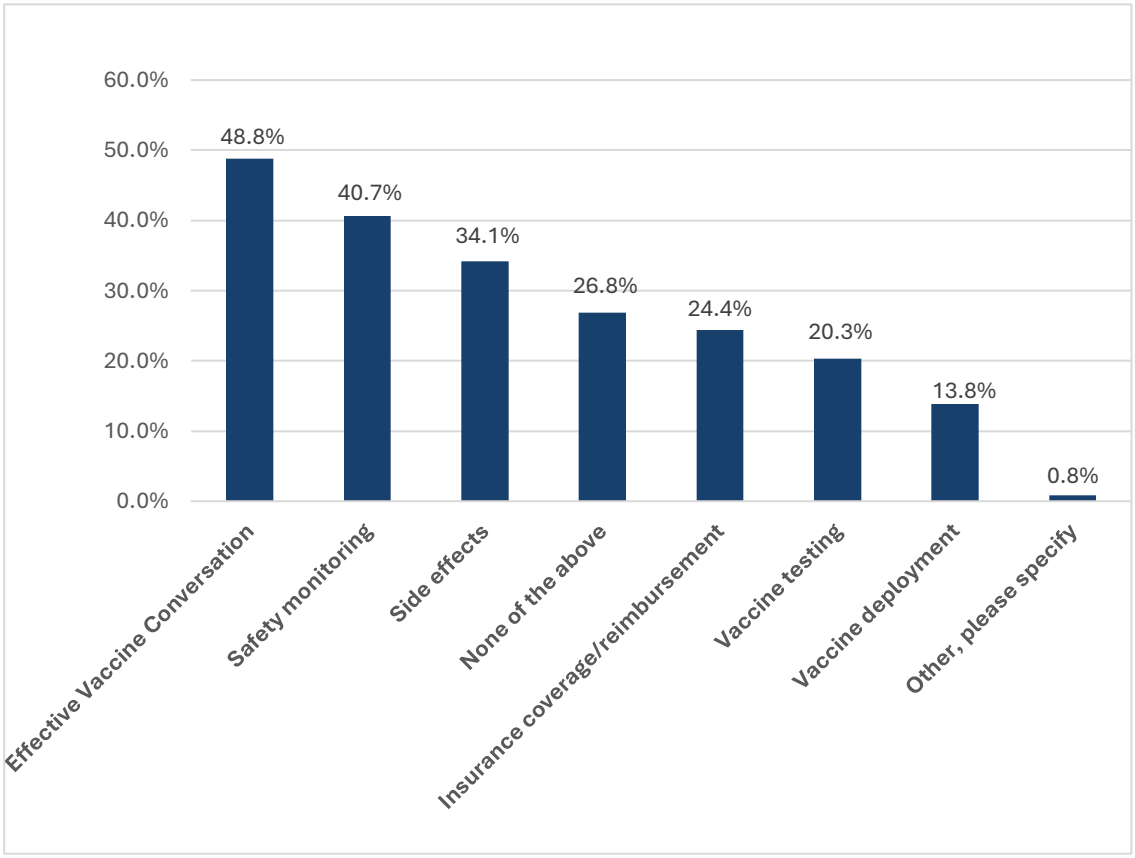
28)

specific week of pregnancy, and how it will help the baby. How will it help me? Um, what for? I mean, all those important aspects. (Focus Group 5)

Recommendation 3: Improve resources available to professionals

Our survey respondents rated resources about how to have effective vaccine conversations as those they would most like to have (Figure 7). Following closely was a request to have resources related to safety monitoring and side effects. Focus group participants also requested more detailed information about safety and side effects.

Figure 7: Areas providers would like further resources (123)



Training professionals in having effective vaccine conversations could also potentially address issues of mistrust or poor rapport between patients and professionals.

Recommendation 4: Expand access to vaccines during visits

Additionally, for those professionals who did face issues accessing or delivering these vaccines in their workspaces, addressing those systemic barriers was paramount. As one nurse who provides care to pregnant patients and young children at home said,

> *… I believe it was back in the early 2000s, maybe 2005, 2008, when we had a whooping cough outbreak here. We were given Tdap vaccines to give in the field, not only to our pregnant clients but to anybody that wanted to show up at that home visit. Anybody. It was the immediate family members in the house, it was their cousins, their grandmas. I would take my little ice chest and for months I would be giving 5-10 shots sometimes at home visits, and I really felt effective then. Because I was doing actual clinical work. I do a lot of psychosocial hands-off talking work, so yeah, give me the vaccines. I would have no problem vaccinating my clients in one visit. Yup.* (KII 1669)

Recommendation 5: Ensure that other organizations (government and civil) commit resources to supporting access to vaccines during pregnancy

The professionals we spoke to were all pro-vaccine; it is likely that there was bias in terms of who was likely to respond to a survey about vaccines during pregnancy and who was likely to indicate their willingness to participate in further data collection on this topic. However, in part because of this, we heard from many professionals in our interviews that they were eager for government actions and advocacy to better support vaccine access and acceptance.

Particularly given the uncertainty regarding the federal government's vaccine policies at this time (a topic which all key informants mentioned), many healthcare professionals were eager to see Washington state play a larger role in advocating for, recommending, or perhaps purchasing vaccines, so as to ensure an uninterrupted supply for their patients.

Recommendation 6: Implement a broad public health information campaign

We also heard from professionals who thought that broad public health campaigns in support of vaccines were needed. Noting that their patients often did not understand how vaccines work, did not understand herd immunity, or had not heard that there were vaccines recommended during pregnancy, many of these professionals believed broader societal awareness of vaccines, their role in health, and the of the idea that getting vaccines is a behavior that supports the most vulnerable individuals in our communities could help sway people, or at least provide a counterpoint to the vocal anti-vaccine movement:

> *Public campaigns, commercials, advertisements on websites, on the sides of buses, on billboards. Like with the Back to Sleep campaign that came out almost 30 years ago. I don't have to talk about it - well, I do now - there was a period of time where I didn't have to talk about Back to Sleep, because everybody just knew you did that.*
> (KII 1669)

Similarly, some professionals thought that this directive would be best achieved by trustworthy public health messaging on social media. Professionals also indicated support for keeping or enhancing the strictness of vaccine requirements, for instance at public schools:

We're fired up about it. If there are groups like yours that are like, "We need more people to come out and say this," they literally just need to give us marching orders. We can write up pieces, we can testify in front of the state legislature, we can do all kinds of things. I do think that healthcare providers, especially during pregnancy, are so fired up about this – vaccines kept people out of our ICU's, I don't think any of the other measures that we took were as effective, and we're all super traumatized and sad about COVID, but we're all worried about the future. So, if there's anything that we can do either collectively or individually, I just think we may need some marching orders because if it gets worse and all of a sudden there's no funding for vaccines, that's something we would be willing to really rally for. Because it's really not controversial. It's really not (KII 1760)

V. Summary & Recommendations

Summary

This report presents findings from a mixed-methods study assessing vaccine uptake and communication between pregnant people and their healthcare professionals in Washington state. We found that pregnancy is a unique and influential time for interactions with healthcare and healthcare decision-making, especially in relationship to vaccines. Furthermore, pregnancy is a time when people have intensive interactions with healthcare professionals and are able to have repeated conversations over time. Despite strong recommendations for COVID-19, influenza, Tdap, and RSV vaccines during pregnancy, uptake and professional recommendation rates varied widely between the four vaccines. Tdap and RSV were more commonly recommended and accepted, while flu and COVID-19 faced skepticism and hesitancy.

Key influences on vaccination decisions included protecting the baby, professionals' communication style, individual experiences, and the trustworthiness of information sources. The report highlights the importance of using a presumptive followed by motivation interviewing approach, tailoring education and recommendations to individual patient circumstances and needs and improving professionals' training and system-level support to increase access and confidence for vaccines administered during pregnancy.

Key Recommendations

Clinic-Level Recommendations

- **Use a presumptive with motivational interviewing approach:** Present vaccines as routine care unless the patient opts out. When patients express hesitancy, address concerns with curiosity and empathy.
- **Clearly articulate the importance of vaccines for the health of the baby:** Emphasize benefits to the baby and risks to the pregnant person if they are not vaccinated, especially for flu and COVID-19.
- **Train and support frontline staff (e.g., medical assistants):** Ensure all staff who discuss or administer vaccines are well-informed and use effective approaches to introducing vaccines and addressing vaccine hesitancy.
- **Leverage continuity:** Revisit the vaccine topic throughout prenatal care.
- **Increase vaccine accessibility in small clinics and non-clinic care settings:** Address logistical barriers like insurance billing and storage.

Public Policy Recommendations

- **Expand professional education:** Develop continuing education modules on prenatal vaccine safety, especially targeting non-physician roles.
- **Disseminate Existing Resources:** Ensure the distribution of existing informational materials for pregnant people.
- **Enhance Public Messaging:** Normalize flu and COVID-19 vaccines as essential for maternal and fetal health.

VI. References

1. Opel DJ, Robinson JD, Spielvogle H, et al. “Presumptively Initiating Vaccines and Optimizing Talk with Motivational Interviewing” (PIVOT with MI) trial: a protocol for a cluster randomised controlled trial of a clinician vaccine communication intervention. *BMJ Open*. 2020;10(8): e039299. doi:10.1136/bmjopen-2020-039299

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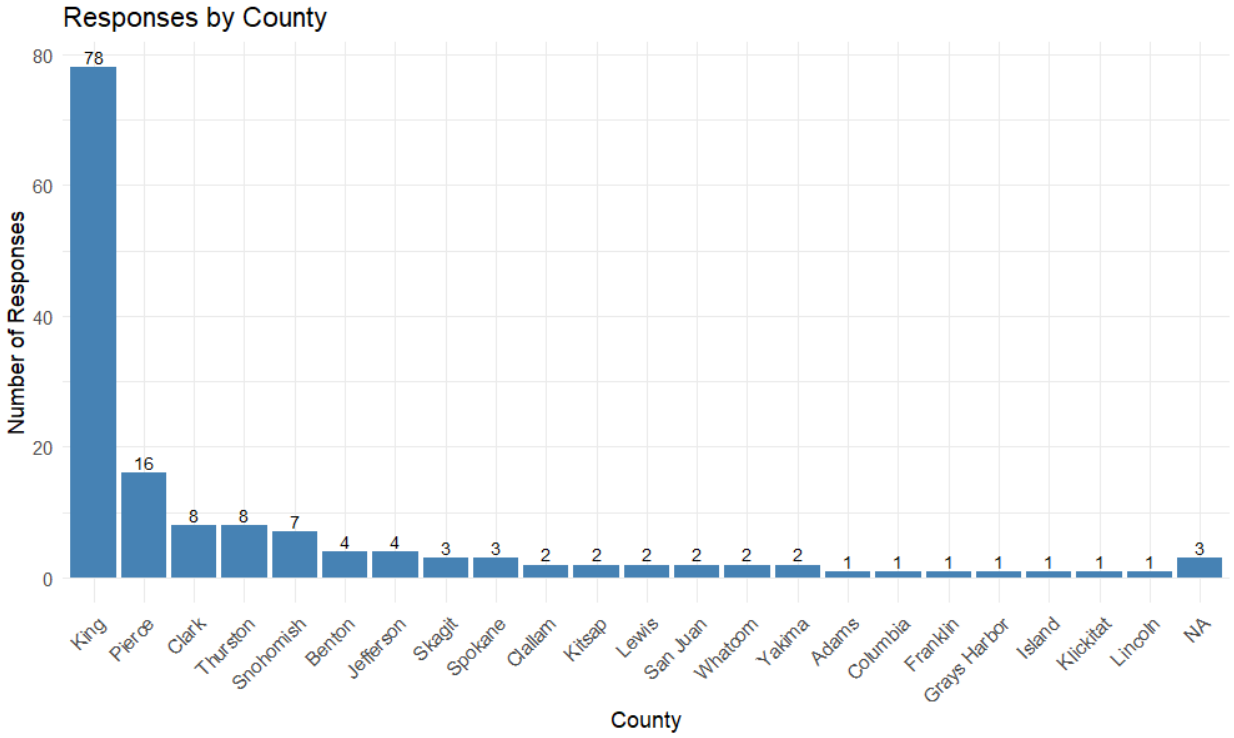
3. Brewer NT, Hall ME, Malo TL, Gilkey MB, Quinn B, Lathren C. Announcements Versus Conversations to Improve HPV Vaccination Coverage: A Randomized Trial. *Pediatrics*. 2017;139(1): e20161764. doi:10.1542/peds.2016-1764

VII. Appendices

1. Survey responses by County



2. Open-ended responses to vaccine barriers by role/setting

- Covid vaccine has significantly increased miscarriage and infertility, according to studies and VAERS; it is not
- Doula, not acting in a clinical role.
- Doulas should not provide medical advice, but can provide unbiased information and encourage them to do research
- Hard to counter misinformation
- I am concerned about insurance reimbursement and my patients' ability to pay for the vaccines (inability to pay)
- I cannot identify any barriers to this discussion.
- I do not do fear-based consents, if they follow CDC guidelines as an authority, they will get the vaccines and I
- I do not feel comfortable addressing pregnant patients' questions about vaccines (lack of knowledge)
- I do not have enough time during the appointment (time constraint)
- I do not trust the safety nor efficacy of these shots for pregnant women.
- I respect patient's decision
- I want to keep the appointment positive and avoid conflict (perceived resistance)
- I wish we stocked the Covid vaccine!

- It is a priority in our practice to discuss vaccines
- It’s important to document these conversations and I do
- Many people seeking birth center births do not want to hear me give information about vaccines and will just rep
- Misinformation swaying patient choice against vaccines and lack of respect for patient choice
- My clinical setting does not carry the vaccines recommended during pregnancy (lack of access)
- My pregnant clients are actually low-risk, and many have preexisting anti-vaccine beliefs, though we still talk t
- My pregnant patients are low risk/not at risk (perceived risk)
- N/a
- None
- Not my lane
- Not my role
- Not present for office visits; inpatient care only
- Often clients have read/her false information and it’s difficult to counter beliefs that they feel set on. I use
- Outside of scope to vaccinate
- Parents will bring up vaccine questions with me if it is relevant to them and my medical care
- Patient's strong opinions against vaccines can lead to lack of trust in their providers if I keep counseling the
- Patients seem to be relying upon their" research on the internet versus their doctor's recommendation
- Reliable research
- Some vaccine hesitancy or folks that just do not vaccinate in my population
- Understanding of the vaccine objections
- We are far too busy addressing legitimate ways to improve health and immunity.
- Zero barriers
- community tends to be anti-vax and pushes back when asked
- none
- patient disinformation
- pt's not interested in talking about it
- scope issues--I always educate on why vaccines are important, but I can't give medical advice as a doula.

3. Vaccine confidence scores (COVID, Flu, TDAP, RSV)

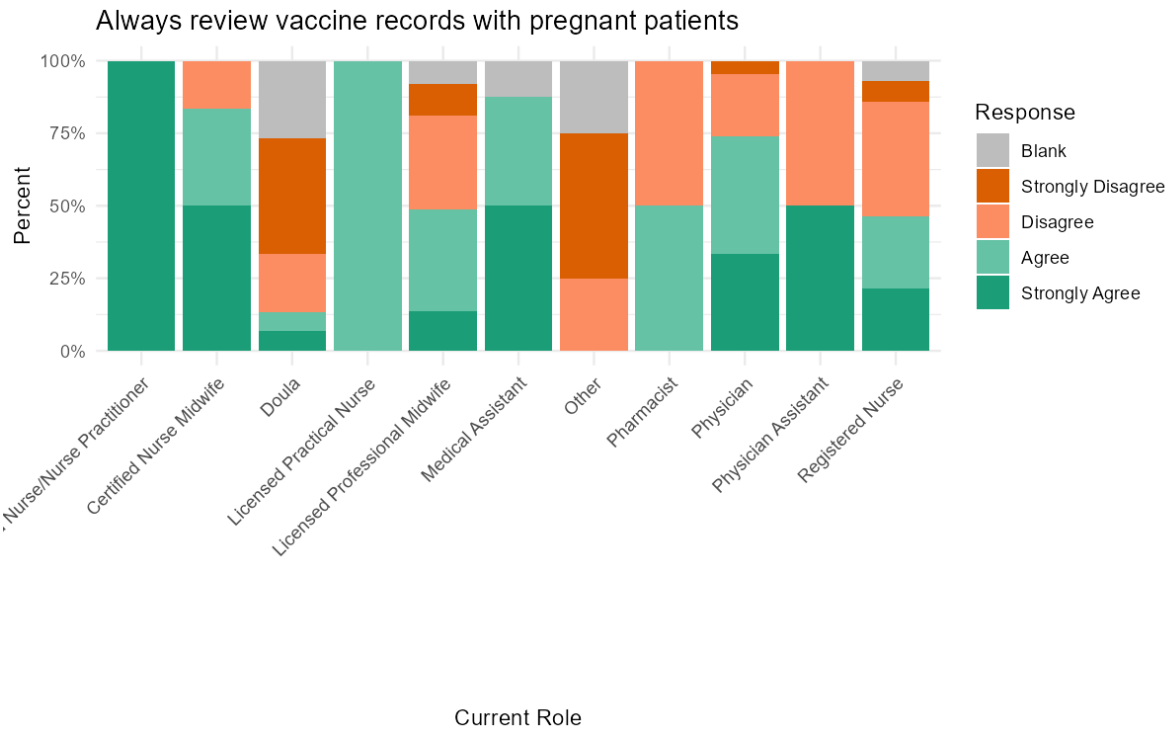
Current Role	COVID Vaccine Confidence score		Flu Vaccine Confidence score		RSV Vaccine Confidence score		TDAP Vaccine Confidence score	
	Mean Confidence	N	Mean Confidence	N	Mean Confidence	N	Mean Confidence	N
Advanced Practice Registered Nurse/Nurse Practitioner	1	1	1	1	1	1	1	1
Certified Nurse Midwife	1	12	1	12	1	12	1	12
Doula	2	15	2	15	2	15	2	14
Licensed Practical Nurse	2	2	2	2	1	2	1	2
Licensed Professional Midwife	2	37	2	37	2	37	2	36
Medical Assistant	2	8	1	8	2	8	1	8
Other	2	4	2	4	2	4	2	4
Pharmacist	2	2	1	2	1	2	1	2
Physician	1	42	1	42	1	42	1	42
Physician Assistant	1	2	1	2	1	2	1	2
Registered Nurse	2	28	1	27	1	28	1	27

4. Vaccine recommendations by role (Always vs Never)

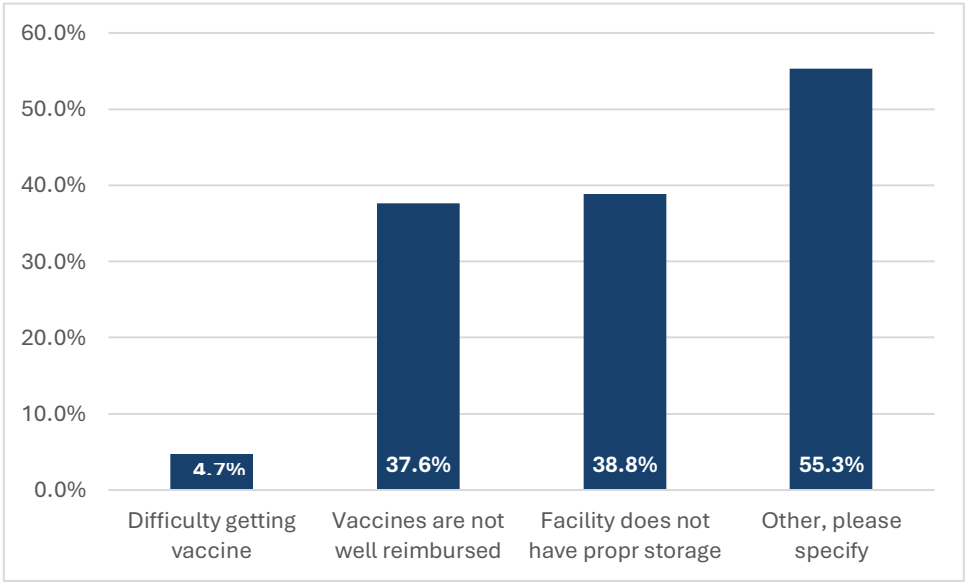
Current Role (Always)	Covid	Flu	Newborn	RSV	TDA
Advanced Practice Registered Nurse/Nurse Practitioner	1 (n=1)	1 (n=1)	1 (n=1)	1 (n=1)	1 (n=1)
Certified Nurse Midwife	0.75 (n=12)	0.67 (n=12)	0.58 (n=12)	0.75 (n=12)	1 (n=12)
Doula	0.13 (n=15)	0.13 (n=15)	0.33 (n=15)	0.13 (n=15)	0.13 (n=15)
Licensed Practical Nurse	0 (n=2)	0.5 (n=2)	1 (n=2)	0.5 (n=2)	0.5 (n=2)
Licensed Professional Midwife	0.54 (n=37)	0.59 (n=37)	0.32 (n=37)	0.7 (n=37)	0.7 (n=37)
Medical Assistant	0.5 (n=8)	0.75 (n=8)	0.88 (n=8)	0.75 (n=8)	0.75 (n=8)
Other	0 (n=4)	0 (n=4)	0 (n=4)	0 (n=4)	0 (n=4)
Pharmacist	0.5 (n=2)	1 (n=2)	0.5 (n=2)	0.5 (n=2)	1 (n=2)
Physician	0.64 (n=42)	0.83 (n=42)	0.79 (n=42)	0.83 (n=42)	0.93 (n=42)
Physician Assistant	0.5 (n=2)	0.5 (n=2)	0 (n=2)	0.5 (n=2)	0.5 (n=2)
Registered Nurse	0.36 (n=28)	0.68 (n=28)	0.82 (n=28)	0.5 (n=28)	0.71 (n=28)

Current Role (Never)	COVID	Flu	Newborn	RSV	TDAP
Advanced Practice Registered Nurse/Nurse Practitioner	0 (n=1)	0 (n=1)	0 (n=1)	0 (n=1)	0 (n=1)
Certified Nurse Midwife	0 (n=12)	0 (n=12)	0 (n=12)	0 (n=12)	0 (n=12)
Doula	0.4 (n=15)	0.33 (n=15)	0.27 (n=15)	0.33 (n=15)	0.33 (n=15)
Licensed Practical Nurse	0 (n=2)	0 (n=2)	0 (n=2)	0 (n=2)	0 (n=2)
Licensed Professional Midwife	0.16 (n=37)	0.16 (n=37)	0.11 (n=37)	0.16 (n=37)	0.16 (n=37)
Medical Assistant	0 (n=8)	0 (n=8)	0 (n=8)	0 (n=8)	0 (n=8)
Other	0.25 (n=4)	0.25 (n=4)	0 (n=4)	0.5 (n=4)	0.5 (n=4)
Pharmacist	0 (n=2)	0 (n=2)	0 (n=2)	0 (n=2)	0 (n=2)
Physician	0.07 (n=42)	0.05 (n=42)	0.07 (n=42)	0.05 (n=42)	0.02 (n=42)
Physician Assistant	0 (n=2)	0 (n=2)	0.5 (n=2)	0 (n=2)	0 (n=2)
Registered Nurse	0.11 (n=28)	0 (n=28)	0 (n=28)	0 (n=28)	0.04 (n=28)

5. How often professionals document vaccine conversations with pregnant patients in their electronic health record



6. Reasons professionals don't carry vaccines: Closed ended

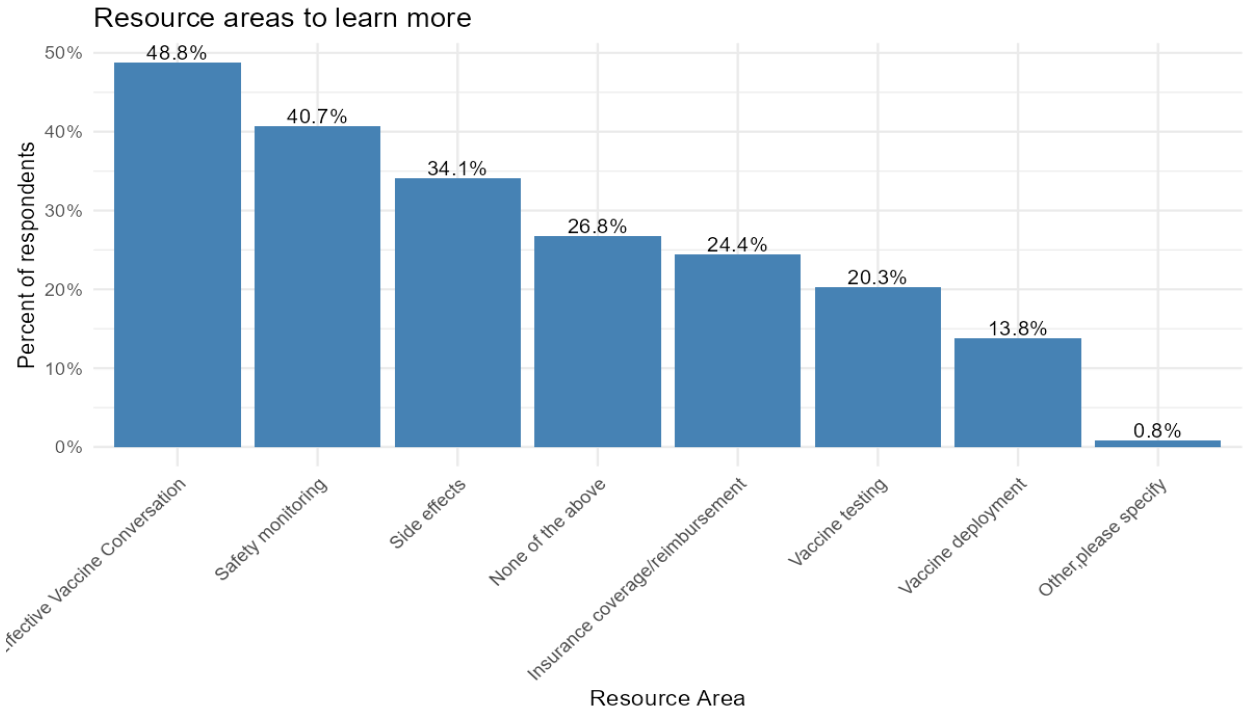


7. Other reasons professionals do not carry vaccines: open-ended answers

- not in scope, I'm a doula
- Not a clinical provider.
- They are poison, plus I am a doula so cannot distribute vaccines.
- out of scope
- Not used in sufficient numbers for packaging.
- I don’t know
- Inability to order a small number of vaccines
- Low ability to estimate restocking needs. Easy availability at outside pharmacies and facilities.
- I refer out to their providers. Not part of my practice
- out of scope
- I refer to prenatal providers for all of these vaccinations.
- Do not carry
- low uptake COVID, easier pathway to get at pharmacies
- small demand so they tend to be outdated before used
- It is not my role to inject any experimental drugs or toxic substances, such as aluminum or thimerosal, into pregnant women. At least 95% of my patients are very well-researched and are doing everything they can to avoid toxins and anyone who distributes them.
- Until adequate studies show safety for pregnant women (yes, if you are pregnant, you are a woman) and their pre born babies, and that there is more benefit than risk, the shot does not cause micro-clotting, DNA altering, turbo cancers, ADHD in children, or impaired immunity, then I do not wish to ca
- Vaccines are poison
- I don’t believe in any vaccine during pregnancy
- Cost is higher than demand
- We have a state-supported child vaccine program 18 and under. We do not carry private vaccines because of the economics.
- Too small of patient percentage in one of my clinics to justify carrying the vaccines - administrative burden, cost if not used
- safety of vaccine
- unsure
- Out of my scope to provide. I only educate.
- I question safety and my clientele is mostly distrustful of blindly accepting vaccinations based on “one size fits all approach.” Also, why is there not a pertussis only vaccine for pregnant people instead of a 3 part vaccine?
- Not Qualified
- We do nurse home visit, our work is more about education
- vaccines not given in my role
- Na
- We carry nirsevimab for the babies
- Not in scope of practice
- Do not offer this

- We don’t have the RSV vaccine for pregnancy because it’s extremely expensive. We do carry immunoglobulin for newborns.
- Lack of demand for covid 19 vaccines
- We are relatively low volume
- UW medicine won’t give it to our clinic despite asking for it!
- I do not provide primary OB care
- Not in scope of practice
- doulas do not provide vaccinations
- Not included in our program delivery
- Do not recommend due to limited research.
- Historically we were not able to provide based on storage issue; presently management not interested in providing covid vaccine
- Pts have transportation problems and cannot always make it to the appointment
- We do not give vaccines
- Not within our scope of practice to administer vaccines
- unsure about the other
- we only provide vaccines to children not adults

8. Subject areas in which professionals would you like further resources related to vaccines during pregnancy



9. Where professionals go for current information and/or updates on vaccines during pregnancy

Sources accessed to get current info on vaccines	n	%
American Academy of Family Physicians (AAFP)	17	13%
American Academy of Pediatrics (AAP)	34	27%
American College of Obstetrics and Gynecology (ACOG)	87	69%
Centers for Disease Control and Prevention (CDC)	98	78%
Immunitycommunitywa.org/Immunization Action Coalition of Washington (IACW)	4	3%
Immunize.org	17	13%
Local Health Jurisdiction/County Health Department	20	16%
Medical journals (JAMA, NEJM, etc.)	13	10%
Medical news organizations (Medscape, UpToDate, etc.)	24	19%
Online maternal vaccination toolkits	4	3%
Other, please specify	11	9%
The Food and Drug Administration (FDA)	9	7%
The World Health Organization (WHO)	24	19%
Washington Department of Health	56	44%

10. Where professionals report sending pregnant patients for further reading about vaccines during pregnancy

Where patients sent for more info	n	%
American Academy of Family Physicians (AAFP)	13	10.2%
American Academy of Pediatrics (AAP)	36	28.1%
American College of Obstetrics and Gynecology (ACOG)	63	49.2%
Centers for Disease Control and Prevention (CDC)	95	74.2%
I do not offer additional reading	7	5.5%
Immunitycommunitywa.org/Immunization Action Coalition of Washir	4	3.1%
Immunize.org	16	12.5%
Local Health Jurisdiction/County Health Departments	14	10.9%
Online maternal vaccination toolkits	10	7.8%
Other, please specify	14	10.9%
The Food and Drug Administration (FDA)	4	3.1%
The World Health Organization (WHO)	22	17.2%
Washington Department of Health	43	33.6%