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# Reasons Why Women Accept or Reject the Trivalent Inactivated Influenza Vaccine (TIV) During Pregnancy

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**Abstract** The aim of the study was to gain an in-depth understanding of the reasons why pregnant women accept or reject the seasonal influenza vaccine. The qualitative descriptive design used a face-to-face semi-structured interview format. Sixty pregnant and postpartum women at two hospitals in the Northeastern United States participated. Content analysis was the inductive method used to code the data and identify emergent themes. Six themes emerged from the data: differing degrees of influence affect action to vaccinate; two-for-one benefit is a pivotal piece of knowledge that influences future vaccination; fear if I do (vaccinate), fear if I don't; women who verbalize 'no need' for the vaccine also fear the vaccine; a conveniently located venue for vaccination reduces barriers to uptake; H1N1—a benefit and barrier to the seasonal vaccine. Our study supports previous findings and reveals a deeper understanding and interpretation of the behavior and decision-making to accept or reject the influenza vaccine. Understanding the reasons behind the behavior of vaccine rejection gives us the chance to change it.

**Keywords** Pregnancy · Influenza · Vaccination · Qualitative interviews

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## Introduction

Influenza is an acute respiratory illness potentially preventable with vaccination. Pregnant women and infants are two high-risk populations disproportionately affected by influenza and experience increased outpatient visits, hospitalizations, and mortality during inter-pandemic and pandemic influenza seasons [1–5]. In particular, infants under 6 months of age have the highest influenza infection rates, as well as the highest rates of hospitalization in childhood [5]. Accordingly, maternal vaccination is recommended to reduce the threat of seasonal influenza and is the subject of this study.

Maternal influenza vaccination is a safe, effective, and efficient disease prevention strategy to protect the mother during pregnancy and early postpartum, and the infant during the critical period from birth to six months [6–8]. A timely immune defense transmitted in utero later provides protection to the young infant, who is highly susceptible to infections, yet too young to be immunized [9]. The Advisory Committee on Immunization Practices (ACIP) and the American College of Obstetricians and Gynecologists (ACOG) have recommended the trivalent inactivated influenza vaccine (TIV) to women in all trimesters since 2004 [10, 11] when the maternal vaccination rate was 12.9% [12]. Recently, the Centers for Disease Control and Prevention (CDC) conducted an internet survey and of the 1,457 respondents who were pregnant during the 2010–2011 influenza season: 12% were vaccinated prior to pregnancy, 32% during pregnancy, and 5% after pregnancy [13]. These rates are similar to the elevated coverage reported during 2009 when H1N1 emerged and the two influenza vaccines were released. However, as uptake is still suboptimal, efforts continue nationally to reach the 80% Healthy People 2020 target [14].

Based upon quantitative studies conducted in recent years, some barriers to vaccination have declined, while others have continued. One common barrier to vaccination for both pregnant women and providers has been inadequate and inaccurate knowledge of influenza and maternal vaccination. Other barriers listed in surveys include: concern over vaccine safety for both mother and baby; misperception of the vaccine's importance; and, vaccination not being discussed, recommended, or available. Pregnant women "do not normally get the vaccine" is another barrier [15]. Factors affecting a woman's decision to accept the vaccine have been identified such as, provider's recommendation; increased knowledge of vaccine benefits; history of influenza or vaccination; and vaccine availability. As previous research has been primarily quantitative, the aim of this qualitative study was to gain an in-depth understanding of the reasons why pregnant women accept or reject the seasonal influenza vaccine.

Rosenstock developed the health belief model (HBM) in the 1960s, deriving from psychological and behavioral theories to explain and predict health behaviors in the absence of symptoms [16]. An individual's readiness to take action depends upon the perception of the threat of illness and the likelihood of being able to reduce that threat. In our study, the HBM assumes that pregnant women would likely take preventive action if they perceived (a) susceptibility to influenza; (b) severity of illness; (c) the vaccine's benefit; and (d) ability to overcome barriers. A decade later, Becker promulgated a fifth construct, cues to action [17]. These five HBM constructs are addressed throughout this study.

## Methods

### Research Design

A qualitative descriptive design was used with a naturalistic paradigm to develop an understanding of the human experience of maternal influenza vaccination in a specific context. The women revealed their unique experiences and multiple realities during a face-to-face interview with the researcher who became the human instrument to observe the situation holistically and interpret the meanings in context [18]. The audio-taped interviews captured the rich and solid descriptive data and translated voice into text. The study was approved by the Institutional Review Boards of both hospitals and the University of Connecticut.

### Sample

A purposive sample of 60 women was recruited from two postpartum units and adjoining hospital-based prenatal clinics. They were intentionally selected for their firsthand knowledge and experience of maternal vaccination. To maximize variation using the naturalistic approach, yet capture and describe core themes [18], recruitment of 30–60 women was needed to utilize semi-structured questionnaires [19]. Women included in the study were in their third trimester or new mothers on the postpartum unit, 18+, receiving care at a designated site, and conversant in English or Spanish. Nearly all the Hispanic women were acculturated into American society and able to communicate in English. Pregnant women who attended the low-income hospital-based clinic, or postpartum women at the same hospital, were considered one site. Postpartum patients were excluded if considered ill by the clinical coordinator, had an unstable infant, or failed to complete both the questionnaire and interview.

### Data Collection

Interviews were the primary data collection strategy at the two sites located in the Northeastern United States. Data collection occurred three days a week from May 27 to June 25, 2010. Potential participants were identified through the daily patient census and most women were recruited in their individual postpartum rooms where the environment was conducive to communication in privacy. The sole interviewer, a certified nurse midwife, had previous training and experience in qualitative research and prolonged engagement with this type of population. Postpartum participants were selected systematically, starting in room one on the census list.

Participants completed a brief written questionnaire and the semi-structured interview following informed consent. The interview consisted of 15 questions and a final open-ended query allowing individual variation to emerge (Table 1). The questionnaire and the interview guide were developed from the extant literature. Interviews were audio taped and averaged 5–10 min. Transcripts were transcribed verbatim by an outside transcriptionist and reread by the interviewer; there were no missed data and minimal typographical errors.

### Data Analysis

Content analysis was used to analyze the data as explained by Krippendorff [20], which is described as a systematic and replicable research technique used to generate and interpret data into meaningful and informative units that are efficiently and reliably identifiable. Berelson [21], a classic content analyst, has identified 17 uses of content analysis, three of which were applicable to this analysis to (a) identify characteristics of the communication content, (b) express interests and values, and (c) describe attitudinal and behavioral responses.

**Table 1** Interview guide of questions posed to the participants

| |
|---|
| 1. Tell me about your thoughts with the seasonal influenza vaccine (flu shot) during this pregnancy? |
| 2. Who gave you advice about seasonal influenza and the influenza vaccine during your pregnancy? |
| 3. Did it make a difference who talked to you about it; doctor, nurse, family member, or friend? |
| 4. Please describe the reasons for *accepting/rejecting* the flu shot? |
| 5. Was the flu shot available to you in the prenatal office or clinic on the day your doctor talked to you about it? |
| 6. How did you feel after you had the flu shot, did you experience any side-effects? (if accepted) |
| 7. Did you reject the flu shot for fear of needles, cultural beliefs, or previous reaction? (if rejected and not already mentioned). |
| 8. Did you know that you were at increased risk of severe complications from influenza while pregnant? |
| 9. Did you know that you were at significant risk during your pregnancy with (… co-morbidity)? |
| 10. Did you know that the flu shot would help protect you from influenza complications? |
| 11. Did you know that the flu shot was safe to give to a pregnant woman? |
| 12. Did you know that the flu shot given to a pregnant woman does not harm the fetus? |
| 13. Are you aware that the flu shot may help protect your baby for the first few months of life after delivery? |
| 14. Do you think breastfeeding may prolong the protection to your baby? |
| 15. Would you accept the flu shot during a future pregnancy? |
| 16. Is there anything else you would like to add? |

The unit of analysis was the thematic units described by Krippendorff [20] and defined as the segments of the women's individual experiences to accept or reject the influenza vaccine. Krippendorff's analytical technique also includes 'clustering,' a systematic approach to collapsing data with similarities into a tree diagram or dendrogram. Hierarchical clustering illustrates all possible outcomes of a theme (example is presented in Fig. 1).

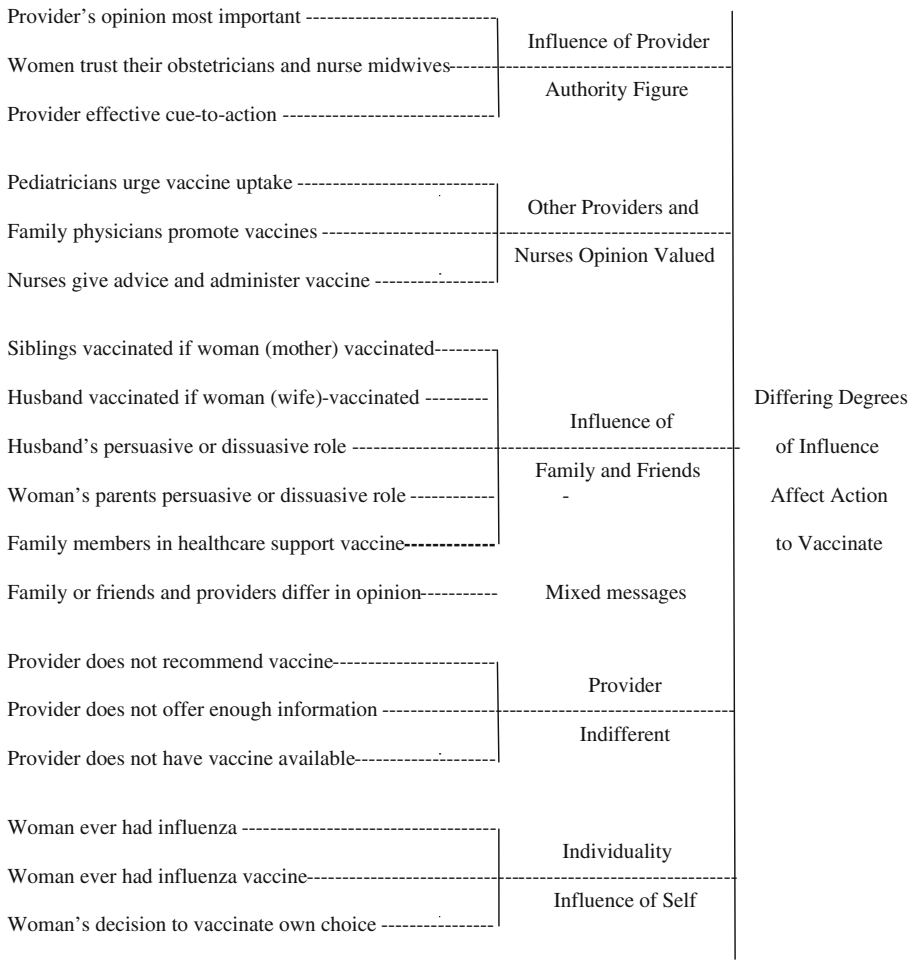


**Fig. 1** Dendrogram resulting from clustering the theme 'Differing degrees of influence affect action to vaccinate' during pregnancy

To begin the thematic analysis three specialists in maternal and child nursing first analyzed the 60 transcripts independently to understand their meaning in context and identify patterns, for an idiographic interpretation of individual cases [18]. Second, they reread the first six (10%) transcripts from both sites (total 20%), independently coding the data into meaningful segments. Third, at the peer debriefing session [18], the specialists reviewed each other's coded descriptions and minor discrepancies were amended to reach consensus. Fourth, a codebook was developed to provide a framework for the categories [22]. It included a definition, inclusion and exclusion criteria, and an example; eight categories were initially assigned. Fifth, the iterative process was repeated with the next 12 (20%) transcripts. Two categories were removed due to overlap. Sixth, all data were then applied to the modified codebook and the entire data set was reviewed in full.

Guba and Lincoln [18] state that qualitative research is judged by trustworthiness and is established through the mutually reinforcing criteria of credibility, dependability, confirmability, and transferability. Applying direct quotes from the transcripts, member checking, peer debriefing, and triangulation of analysts, non-verbal cues and methods verified credibility. An audit trial of data collection strategies, verbatim transcription, field notes, and systematic data reduction methods contributed to dependability and confirmability. Descriptions of the women's experiences in this study may provide sufficient information to be transferrable to other contexts.

## Results

Sixty women participated in the study and 31 accepted the influenza vaccine during pregnancy. Gestation began in late August to early October in 2009 and most women remained healthy. Two participants reported influenza in their first trimester and were treated with Oseltamivir as outpatients. Socio-demographic and clinical characteristics collected via the pre-interview questionnaire are presented in table form (Table 2). There was little difference between primiparas and multiparas uptake and responses.

Overall, the participants were receptive to the sole interviewer, with only five postpartum women declining recruitment. Two women refused outright, two were ready to discharge, and one requested compensation when none was offered. All participants will subsequently be called 'women,' whether they were pregnant or postpartal at the time of data collection. Obstetricians and certified nurse midwives will be referred to as 'providers' and the women's voices are indented or in quotation marks.

**Table 2** Demographic and clinical characteristics by seasonal influenza vaccination status

| Characteristics | No. (%) accepted vaccine | No. (%) rejected vaccine |
|---|---|---|
| Seasonal flu vaccine | | |
| $N = 60$ | 31 | 29 |
| Site 1 | 14 (45) | 16 (55) |
| Site 2 | 17 (55) | 13 (45) |
| Age mean (year) | 33 | 31 |
| Range | (19–40) | (18–45) |
| Ethnic background | | |
| American white | 15 (48) | 9 (31) |
| Black | 5 (16) | 1 (3) |
| Hispanic | 7 (23) | 5 (18) |
| European | 4 (13) | 9 (31) |
| Asian | 0 | 4 (14) |
| Australasian | 0 | 1 (3) |
| Education | | |
| Graduate degree | 7 (23) | 13 (45) |
| 4-year degree | 9 (29) | 7 (24) |
| Some college | 8 (25) | 3 (10) |
| High school or less | 7 (23) | 6 (21) |
| Work status | | |
| Full-time | 15 (48) | 12 (42) |
| Part-time | 7 (22) | 3 (10) |
| Work at home | 1 (3) | 0 |
| Stay-at-home-mom or not working | 8 (27) | 14 (48) |
| Prenatal insurance | | |
| Private | 20 (64) | 23 (79) |
| Public | 11 (36) | 6 (21) |
| Household income | | |
| ≤$50,000 | 15 (48) | 14 (48) |
| >$50,000 | 9 (29) | 11 (38) |
| Not disclosed | 7 (23) | 4 (14) |
| Prenatal | 4 (7) | 3 (5) |
| Postpartum | 27 (93) | 26 (95) |
| Primipara | 10 (32) | 11 (38) |
| Multipara | 21 (68) | 18 (62) |
| 1st trimester | 21 (68) | ∓ |
| 2nd | 8 (26) | ∓ |
| 3rd | 2 (6) | ∓ |
| Co-morbidities | | |
| Asthma | 8 (26) | 3 (11) |
| Diabetes | 1 (3) | 1 (3) |
| Other | 0 | 1 (3) |
| None | 22 (71) | 24 (83) |
| Ever had flu* | 18 (60) | 17 (59) |
| Ever had flu vac.* | 29 (94) | 11 (38) |
| Family vac.* | 27 (87) | 13 (45) |
| Family healthy | 28 (90) | 26 (93) |

**Table 2** continued

| Characteristics | No. (%) accepted vaccine | No. (%) rejected vaccine |
|---|---|---|
| Seasonal and H1N1 vaccines | 26 (84) | 0 |

* $P$ values were calculated with $\alpha = 0.05$ for Students' $T$ test, Chi-square test, or Fisher's Exact test if the cell count <5. ∓—Nearly all women in first trimester. Statistical analyses were completed using SAS version 9.1 (SAS Institute Inc., Cary, NC)

## Theme 1: Differing Degrees of Influence Affect Action to Vaccinate

Prior to pregnancy women are influenced by their established networks of trust, and during regular prenatal visits, their trust and confidence in their provider typically increases. Providers are the authority figures when it comes to vaccination during pregnancy. However, they appear to invest to different degrees in their primary care role of promoting vaccination, which affects their influence on whether women will take action and accept the influenza vaccine or not. Providers who are indifferent often create a barrier to vaccination.

### *Influence of Healthcare Personnel*

If providers explain the threat of influenza and recommend maternal vaccination, most women accept the vaccine. Multiparas also view pediatricians as influential and accept the vaccine for the benefit of themselves and their children (newborn's siblings). Family physicians and nurses contribute in a supportive role. Providers do have the most influence as a 30-year-old vaccinated primipara explains:

> For me, I trust my doctor. If you don't trust your doctor, you may as well not go to them. So, you know, he told me I should get it and I listened to him.

In contrast, other women perceive an indifferent provider as a barrier to vaccination, such as the following 18-year-old unvaccinated primipara:

> The doctor just asked if you wanted the vaccine and when you said no, she didn't follow-up with any information.

### *Influence of Family and Friends*

Family members influence the women's perceptions of whether to vaccinate or not. Many vaccinated women have family who work in healthcare positions and or family members who are also vaccinated. Specifically, children at home are an effective cue-to-action; a 34-year-old multipara describes her unique situation that inspired her to always have the influenza vaccine for the benefit of the family:

> When my daughter was 13-months-old she tested positive for flu. It was the worst 10 days of my life… My husband and I knew from that point on we were going to get vaccinated for the seasonal flu every year.

Other women complain that mixed messages between family members or friends and providers cause indifference and consequently create a barrier to vaccination.

> Even my parents who I consider like of old school, were like, 'don't get the flu vaccine.' And then the doctor's are saying, 'Yes.' Who do you put your trust in? [sic].

Women also address their partner's dissuasive role; often due to the latter's lack of knowledge or lower vaccine uptake. One unvaccinated multipara reports her husband's influence, which serves as a barrier:

> My OB/GYN stressed that it was important to get both vaccines. I didn't have full trust… (Unvaccinated husband interjects) I had concerns about it, because you don't normally get it. Why would you get it now?

Erroneous information from family members and friends needs to be countered by the provider with accurate knowledge or else it propagates into subsequent pregnancies and further inaction. A 26-year-old grandipara believes her friend's advice more than the providers:

> People around my family … were telling me that you would lose the baby. They were even saying not to give the vaccine to kids.

### *Influence of Self*

Women may also value their own opinion more than the provider. "She presented both sides and then left it up to me," comments a 34-year-old unvaccinated multipara.

## Theme 2: Two-for-One Benefit is a Pivotal Piece of Knowledge for Future Vaccination

Women who are aware of their susceptibility, severity of illness, and benefits of a safe and effective vaccine, are more likely to accept the influenza vaccine. In particular, women who are knowledgeable of the two-for-one benefit to protect them from illness and to transfer immunity to the newborn are more likely to accept the vaccine. A 37-year-old vaccinated primipara explains:

> For me it was something I automatically did, because I was pregnant. I thought it was something I should do, for the health of the baby… and myself carrying the baby.

However, the majority of women in this study are unaware of the conferral of protection from the vaccinated mother to the fetus and infant after birth. Furthermore, when they garner this 'two-for-one' knowledge from the interviewer's questioning they are more earnest to take action and vaccinate in a future pregnancy. One 33-year-old unvaccinated multipara recounts:

> Oh, I didn't know that. I would have done the flu vaccine if I knew that [sic].

Some women who rejected the vaccine during pregnancy were a bit agitated that they were learning this information during the postpartal period when it was too late for the newborn to benefit. The interviewer notes verbal signals and non-verbal cues such as, some of the women changing their tone and inflection, and others leaning forward in a challenger stance. These women were surprised by the two-for-one benefit, a 28-year-old unvaccinated primipara retorts:

> Nobody said that—that wasn't an advertisement so far as reasons to get it [sic].

Several women and providers appear unaware of the threat of illness and appropriate action to reduce the threat. Other providers may be knowledgeable but fail to convey the facts to women. Unvaccinated women report the following barriers:

> "He didn't think it was that big of a deal since I'm young and healthy;" "He told me there were pros and cons (to vaccination);" "You're injected with the live virus;" "I didn't know the risks and I didn't want to do anything to harm the baby." "My doctor did not want me to have the vaccines…she gave me advice to wash my hands…".

### Theme 3: Fear if I Do (Vaccinate), Fear if I Don't, and No Action when I Fear Both

Most women perceive some fear related to the potential risks of pregnancy, yet their fear differs in contradictory ways. Some fear complications from influenza; they perceive the vaccine as beneficial and consequently accept vaccination. Conversely, others fear vaccination. They perceive it as harmful and therefore their fear serves as a barrier to vaccination. Others fear both influenza and vaccination.

#### *Fear of Vaccine*

Women who reject the vaccine perceive a potential threat to themselves or their fetus. They worry about the safety of the vaccine, as a 36-year-old unvaccinated multipara explains:

> My main concern is that we don't know the side effects on the babies. So I know the pregnant [women] are more at risk… but there is not enough research to say that there are side effects on the babies.

Some others previously vaccinated, perceive the vaccine causes influenza. An unvaccinated 34-year-old primipara reports, "I had it one other time and I felt sick after it."

#### *Fear of Influenza*

In contrast, others perceive an increase in susceptibility and influenza complications if not vaccinated, particularly those at high-risk with co-morbid conditions like asthma, or work-related exposure such as teachers. A 32-year-old vaccinated multipara fears exposure at both work and public transportation:

> Honestly, I was working part-time in the city. So I was on the train … to a big office building. Just having contact with that many people during pregnancy and during the winter months made me more nervous.

#### *Fear of Both Vaccine and Influenza*

Several fear influenza and the vaccine, such as a 22-year-old primipara. She also fears both the H1N1 and seasonal vaccines and consequently decides to have only the seasonal vaccine, the one she gets annually at work. Within the month she contracts H1N1. A first-time father also fears both, "I usually get the vaccine… This year we were having a baby so I tried to avoid that."

Others who fear both the vaccine and influenza, typically wait it out for more compelling information from their provider or availability of a vaccine. When the information or the vaccine does not come forth as expected, the women default to no action.

### Theme 4: Women Who Verbalize 'No Need' for the Vaccine also Fear the Vaccine

Women less nervous about the threat of influenza's complications during pregnancy fit into the 'no need' theme. Their voices come through loud and clear: "I am healthy, I never get sick, never had the flu, or never had the flu shot, so I do not need it." These women value their daily health

habits such as eating healthy foods, keeping their environment clean, and frequent hand-washing as more important than "medicine." A 34-year-old unvaccinated multipara believes influenza is not a serious threat:

> I just never had it in my life, and I never had the vaccine. It was not a big thing growing up to have it (influenza), so I just felt that I don't need it (vaccine).

These women do not have symptoms, do not perceive a threat, and therefore do not take preventive action to reduce the threat. On the surface, the women's attitude appears to be, "if I stay healthy I do not need the vaccine." Yet their deeper concern is the perception that the personal risk is not worth it. One woman complacently comments:

> If it's not broken, why try to fix it?

Many describe their non-interventional philosophy with an international accent. Yet, these women reject the notion that their cultural beliefs create a barrier to vaccination. Only one woman, a 32-year-old multipara, acknowledges a cultural connection:

> I'm Christian and that makes a difference. A Christian believes in God and he protects me.

Some of the 'no need' women plan to have the vaccine in a future pregnancy such as stay-at-home mothers. They predict a future need when their child starts school, as the following 28-year-old primipara explains:

> Probably, if he's two-years-old and going to preschool. So if the first year he will get sick really often because he will be more with the kids, maybe next year I will think about getting those shots [sic].

### Theme 5: A Conveniently Located Venue for Vaccination Reduces Barriers to Uptake

The majority of women seeking vaccination did eventually locate one at the prenatal office, clinic, or at work. Teachers, attorneys, pharmacy and patient-care technicians, a guidance counselor, project manager, and mental health worker found one "easy to get at work." A 30-year-old vaccinated primipara recalls the importance of location:

> I work for GE, they're big on it, that's why I got the flu shot there; otherwise, I wouldn't have gone out of my way to go get it.

Vaccine accessibility and belief in vaccination may also impact whether women's close contacts are vaccinated. To reduce their threat from family members, women encourage their husbands to obtain the vaccine at work and many do. Still, others do not, such as the husband of a 37-year-old unvaccinated multipara who is frequently ill:

> My husband works in a company with hundreds of workers who have children. I was concerned he would bring something home… So, as much as I wanted him to take it (at work), he didn't take it.

Wasting time and energy locating a vaccine is a major barrier for pregnant women and several eventually become fed-up, four from private practices which do not stock the vaccine. If the provider states the influenza vaccine is important and it is not available, this contradicts the original message of the vaccines' importance. An alternative location needs to be available.

### Theme 6: H1N1—A Benefit and Barrier to the Seasonal Vaccine

Concern for H1N1 in the fall of 2009 drew attention to pregnant women and the need to take preventive action against both H1N1 and seasonal influenza. Initially, this produced a benefit to the seasonal vaccine. However, some women did not want to take two vaccines; as the H1N1 vaccine took preference, a barrier to the seasonal vaccine was created. Some women report their provider only recommended the H1N1 vaccine; a 40-year-old multipara subsequently decides against the seasonal vaccine:

> The doctor told me that it (seasonal influenza) wasn't really around here that much so that I shouldn't really worry about it. He said that he would definitely recommend H1N1.

Others perceive the media as a barrier and refuse both vaccines. A 45-year-old multipara concludes with the following statement:

> I wish when these vaccines come out you would get a factual presentation,… something like this in the media, as opposed to sound bites with people lining up in front of CVS trying to get a vaccine. Then you would be able to make a better choice, a more educated decision.

## Conclusion

Our study supports previous findings of maternal influenza vaccination and reveals a deeper understanding and interpretation of the reasons why pregnant women accept or reject the seasonal influenza vaccine. Our results reaffirm that the provider is widely acknowledged to have the most influence in pregnancy, but this influence differs and affects the women's perception of maternal vaccination and uptake. The two-for-one benefit to mother and infant is pivotal knowledge [23–26], and a predictor of future

vaccination. Women perceive negative maternal and fetal effects from vaccination as a barrier [15, 23–27], but they may also fear influenza. Women who verbalize they do not normally get the vaccine or need it [15], may also fear the vaccine. Non-availability of the vaccine affects uptake [24–26], women need an alternative site to demonstrate vaccines' importance. Understanding the reasons behind the behavior of vaccine rejection gives us the chance to change it.

Differing degrees of influence play a major role in whether women accept or reject the influenza vaccine. Most pregnant women who accept the vaccine perceive the threat of influenza from their provider; therefore, the providers' knowledge level and attitude towards the vaccine is vital for uptake. When the provider exudes indifference—"it's not that big of a deal as you are young and healthy," or "there are pros and cons"—women will unlikely take action to reduce the threat of influenza. Dissuasive comments from providers tend to arise when their practice does not stock vaccines; however, logistics support services are costly. If availability is an issue, future steps to demonstrate to women the importance of vaccination may be to include providers establishing relationships with local pharmacies and advertising the vaccines' availability to women, or expanding Rhode Island's 'Immunize for Life' program nationally [15].

Other women who rejected the seasonal influenza vaccine during this pregnancy were unaware of the two-for-one benefit. After garnering this knowledge through the interview, most of the women in this study stated a readiness to take action and vaccinate during a future pregnancy. Consequently, we developed a cue-to-action, a patient-centered pamphlet, accentuating this pivotal piece of knowledge.

We also found an interrelationship between the 'no need' theme and the 'fear if I do' subtheme. Most women in the 'no need' theme overlap with the 'fear if I do' subtheme. Women do not think they need the vaccine if they do not perceive the threat, do not think the vaccine would reduce the threat, or believe the benefits are overshadowed by the vaccine's perceived side effects. Accordingly, the benefits of the influenza vaccine to women—including the safety and effectiveness of the vaccine—need to be loudly publicized. Providers do have influence with this population during uncertain times when the perceived threat is high [28], such as the 2009 season, as evidenced by some 'no need' women accepting the H1N1 vaccine.

Women who feared both the vaccine and influenza stalled in a holding pattern, and when they did not receive adequate information that the threat was real or did not have easy access to the vaccine to reduce the threat, they opted for no action. Therefore, they did not have the ability to overcome the barriers and reach a state of readiness to take action as Rosenstock described.

This study does have limitations. It was based on the experiences of 60 women during a specific time period, and although the sample had diverse culture, education and socio-economic backgrounds, the thematic analysis does not represent all possible responses. Women in the prenatal setting were less inclined to participate than their post partal counterparts, as the interview could potentially delay their appointment. Furthermore, the women's responses were influenced by the widespread media attention and threat of H1N1. Further research could include the husbands' and siblings' effect on maternal vaccination as this was an important finding.

The naturalistic paradigm uncovered the multiple realities of the maternal influenza vaccination experience. Pregnant women who perceive the threat of influenza and the benefits of vaccination, in addition to the provider's strong recommendation and vaccine accessibility, will likely take action to reduce that threat. These factors may also influence their future decisions regarding vaccinating their children [29]. Women with an indifferent provider, or those who do not perceive a threat, are less likely to take preventive action. Providers have multiple opportunities to influence women as the nature and frequency of obstetrical care fosters an environment of familiarity and mutual trust. Maternal influenza vaccination is underutilized and the missed opportunities prevent protection to two vulnerable populations.

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