Expanding Maternal Health Care Services Within the Federal Employees Health Benefits (FEHB) Program

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FEHB
Federal Employees Health Benefits Program

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Dedication

I dedicate this report to my family, as it represents the culmination of my MPP program efforts. Their unbounded love, support, and encouragement made its completion a possibility. I am forever grateful for all the sacrifices they have made that have allowed me to be at UVA.

Disclaimers

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

Furthermore, this report was conducted at the request of OPM. The judgments and conclusions reached in this study are those of the author and are not inherently endorsed by OPM.

Note on Gender-Inclusive Language

It is important to recognize that not all people who become pregnant or give birth identify as women. Gender-inclusive language is critical and this report uses the terms "woman," "women," and "maternal" generally only to be consistent with the language used in the research cited here.

Honor Pledge

On my honor as a University of Virginia student, I have neither given nor received unauthorized aid on this assignment.

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Executive Summary

Maternal health outcomes are consistently worsening throughout the U.S. Mortality rates are increasing and the COVID-19 pandemic has only exacerbated the prevalence of severe perinatal depression among new mothers. Furthermore, there are glaring racial disparities in the realm of maternal health care. Mothers of color, in particular Black women, face significantly higher rates of maternal morbidity and mortality. Nationwide, this has significant negative consequences for mothers, their children, the broader family unit, and ultimately society at large.

As the administrative entity for the Federal Employees Health Benefits (FEHB) Program, the U.S. Office of Personnel Management (OPM) has long been concerned with ensuring high-quality and comprehensive care for its insurance beneficiaries. Amidst the ongoing maternal health crisis, the organization is committed to pursuing new avenues to better serve its maternal population.

This report explores the following avenues towards which OPM can invest resources and energy:

1) Focus on Improving Prenatal Depression Prevention, Screening, and Follow-Up Care
2) Focus on Improving Postpartum Depression Prevention, Screening, and Follow-Up Care
3) Focus on Improving Prenatal Immunization Rates

Each alternative is evaluated on the basis of efficacy, cost-effectiveness, administrative feasibility, and equity. Following extensive research and analysis, this report concludes that **OPM should focus on Alternative #3: Improving Prenatal Immunization Rates** within the FEHB**.** Ultimately, while each policy option could have significant benefits in terms of improving maternal health outcomes, Alternative #3 has the strongest and most robust evidence base, is highly cost-effective, is the most administratively feasible, and could greatly reduce racial disparities in vaccination coverage.

Introduction

Client Overview

As the chief human resources agency of the federal government, the U.S. Office of Personnel Management (OPM) is uniquely positioned to pioneer change in the field of maternal health care. OPM oversees the Federal Employees Health Benefits Program (FEHB), which provides insurance coverage for over 8 million Federal employees, retirees, and their families at a combined annual premium value of approximately $55 billion. The FEHB program contracts with various insurance Carriers for individual medical plans, which consumers are then allowed to choose between for enrollment. As the largest employer-sponsored healthcare plan in the country, the FEHB program has the potential to set the precedent for optimal coverage of maternity care benefits.

The number of childbearing women in the FEHB program (among subscribers and dependents) is over 1.3 million as of March 2022. The number of babies born in the FEHB program in the same time frame was over 44,000. These numbers highlight just how many lives depend on the safe and high-quality provision of these services.

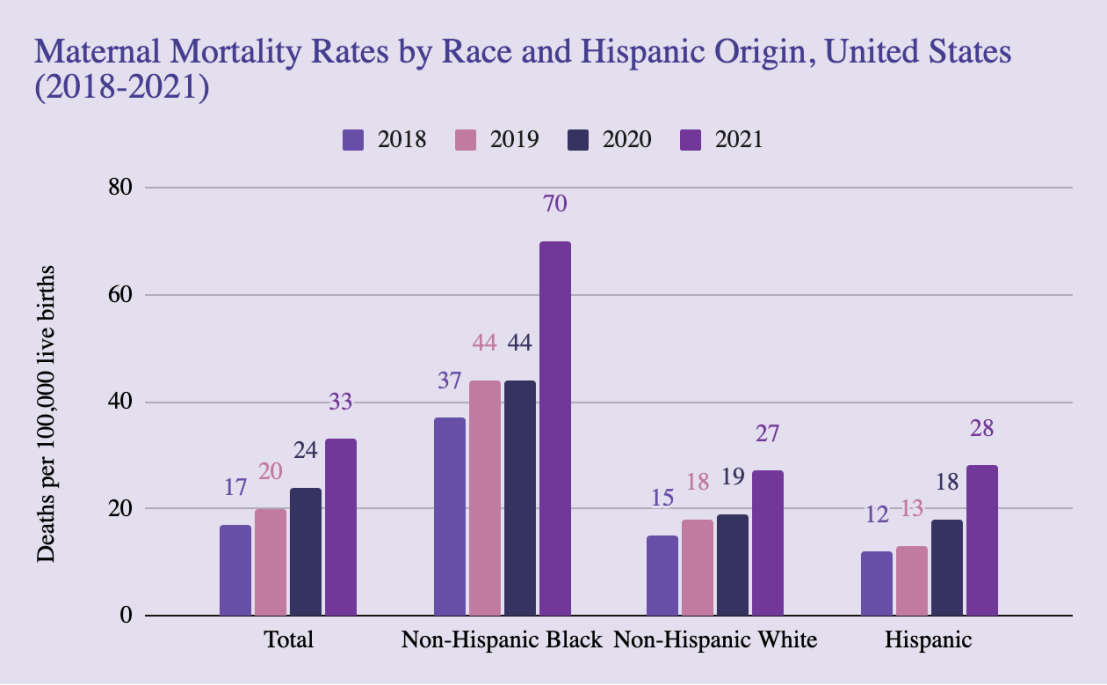
Problem Statement

OPM has consistently dedicated extensive effort and resources to advocate for improved maternal care benefits. But, spurred by the worsening maternal health crisis, OPM is now looking to the future and considering different paths in which it should move forward to continue pushing for expanded maternal health benefit coverage among its Carriers and insurance plans. **There is inadequate coverage and allocation of resources towards maternal health services in the Federal Employees Health Benefit (FEHB) Program, which ultimately can have dire consequences on maternal and infant health outcomes.** OPM's work is towards the overarching goal of improving maternal and infant health outcomes, both in the short and long term.

Background

The U.S. is in the midst of a maternal health crisis. This nation spends more than any other country in the world on hospital-based maternity care, yet it is the only high-resource nation with a consistently rising maternal mortality rate (MMR) (Every Mother Counts, n.d.). Figure 1 shows this concerning trend, as the total MMR in the U.S. has consistently increased over the past several years. Furthermore, the figure also highlights significant racial disparities in maternal mortality. In the U.S., Black women die at a rate that ranges from two to nearly three times the rate of white women – 70 deaths per 100,000 live births among Black women versus 27 deaths per 100,000 live births among white women in 2021 (Hoyert, 2021). Advocates from the local level to even the Biden-Harris Administration have long echoed the call for improved healthcare benefits for mothers and infants. Partly in response to these concerning trends, in June 2022, the White House released its *Blueprint for Addressing the Maternal Health Crisis* in which it outlined several actions federal agencies would take to increase access and coverage of care, eliminate disparities in maternal health outcomes, and reduce rates of maternal mortality and morbidity. However, more needs to be done across different sectors of maternal healthcare.

Figure 1: Trends in Maternal Mortality Rates



Data Source: National Center for Health Statistics, National Vital Statistics System, Mortality (Hoyert, 2021)

OPM is currently considering the following aspects of maternal health to invest further resources towards: improving maternal mental health services or increasing the uptake of prenatal immunization. This report will now describe these avenues and their scope within the FEHB.

Maternal Mental Health

Overview

Perinatal depression is characterized by severe depressive episodes during pregnancy and/or within 12 months postpartum (Yang et al., 2022). Symptoms range from fatigue and lack of appetite to feelings of intense sadness and hopelessness to more severe manifestations such as suicidal ideation (Kerr, 2017). This condition affects between 10 to 20% of women at some point in their lives, making it the most common pregnancy-related complication in the U.S. (Van Niel & Payne, 2020). New research shows that the COVID-19 pandemic might have driven prevalence even higher, with studies citing that up to one in three new mothers who gave birth during the onset of the pandemic experienced postpartum depression and severe anxiety (Mostafazi & Bailey, 2022).

The American College of Obstetricians and Gynecologists (ACOG) has released recommendations that all women should be seen by their clinician within 3 weeks of giving birth (Ramos, 2022). However, according to Johns Hopkins research, only about half of women have any contact with their obstetric care provider within 3 months after giving birth (Johns Hopkins, 2014). As pertains to the identification of perinatal depression, the literature agrees that the condition is prevalent and underdiagnosed. Breedlove and Fryzelka note that less than 50% of pregnant and postpartum women are routinely screened by their healthcare providers (Breedlove & Fryzelka, 2011). Thus, it is clear that the actual number of those affected by perinatal depression may be much higher as they remain undiagnosed.

There is no singular cause of perinatal depression. Common contributing factors are hormone level changes, emotional factors, and other environmental and/or situational factors (Kerr, 2017). Beyond these contributors, there are tangible risk factors for perinatal depression. They are as follows: history of depression, history of physical or sexual abuse, unplanned or unwanted pregnancy, stressful life events, pregestational or gestational diabetes, intimate partner violence, complications during pregnancy, low socioeconomic status, and lack of social support (USPSTF, 2019).

Consequences

Untreated perinatal depression can have devastating effects on health outcomes for both mother and infant. In the prenatal (before delivery) period, depression has been linked to higher chances of premature births, stillbirths, low birth weight, and maternal morbidity, including other birth complications and increased chances of developing postpartum depression (Jahan et al., 2021). Studies have also found significant long-term consequences in the offspring of mothers who suffered from prenatal depression. A systematic review by Gentile identifies an independent association during adolescence between maternal antenatal mood symptoms and an increase in the risk of criminal behaviors in children (Gentile, 2017). Furthermore, Pearson et al. identify that antenatal depression increases the risk of depression in offspring even up to 18 years old (Pearson et al., 2013). Thus, prenatal depression is linked to adverse effects both in the short term and long term for mothers and children.

Untreated depression in the postpartum (after delivery) period has similar ramifications for both mother and child. Mothers who struggle with postpartum depression are more likely to exhibit higher levels of negative maternal behaviors (i.e., hostile or coercive behaviors toward both the infant and the rest of the family). They are also more likely to feel disengaged from their infant and exhibit a lower level of positive maternal behaviors (e.g., playing with the baby, actively bonding,

etc.). This can all have repercussions on the infant's emotional and psychological well-being. The literature confirms this, with Slomian et al. noting that infants born to mothers suffering from postpartum depression struggle with healthy cognitive and behavioral development (Slomian et al., 2019). Netsi et al. also note that children even up to 18 years old of women who experienced postpartum depression had subsequent adverse outcomes (e.g., behavioral problems, worse grades, and higher depression rates) compared to children of women who did not struggle with depression (Netsi et al., 2018).

Overall, the literature is in agreement that untreated perinatal depression creates an environment that is not conducive to the emotional and physical well-being of the mother or child. Furthermore, the condition can lead to significant adverse consequences for not just the mother, but for the infant and the entire family, which can plague them for years to come.

Costs

The costs of untreated perinatal mood and anxiety disorders are staggeringly high, with a 2017 Mathematica report finding that they totaled $14 billion in the U.S., with an average cost of $31,800 per mother-child pair (Luca et al., 2019). The highest costs were determined to be the effects on labor force participation and reduced maternal productivity, as mothers who struggle with perinatal depression can find it more difficult to engage in their normal obligations (Luca et al., 2019). Other significant costs to the healthcare system include expenditures incurred by mothers due to the increased risk of preterm birth and behavioral and developmental disorders among children (Luca et al., 2019). Epperson et al. echo these findings in their study, noting that households affected by postpartum depression "incurred 22% higher mean total all-cause medical and pharmaceutical spending during the first year following childbirth and an average of 16 more outpatient visits than unaffected households" (Epperson et al., 2020). These direct costs of having to pay for more visits are significant, but then there are also the increased indirect costs of interacting with the healthcare system to consider. This takes away time that the mother can spend in the household. Therefore, perinatal depression has dire costs for not only the mother and infant but also the rest of the family.

Maternal Mental Health Care Benefits in the FEHB

OPM relies on the United States Preventive Services Task Force (USPSTF), an independent panel of national experts in disease prevention and evidence-based medicine, to inform many of its recommendations regarding preventive service benefits. In 2019, USPSTF published a B-grade recommendation titled *Perinatal Depression: Preventive Interventions*. In this publication, the USPSTF recommends that clinicians "provide or refer pregnant and postpartum persons who are at increased risk of perinatal depression to counseling interventions" (USPSTF, 2019). Their recommendations are graded on a letter grade (an A, B, C, or D grade or an inconclusive ranking) based on the strength of the evidence and the perceived benefits of the service. USPSTF recommendations deemed to be of A or B rank are required by OPM to be covered by all of its insurance Carriers within the FEHB program. Therefore, while universal perinatal depression screening is not mandatory, since this is a B-grade recommendation, screening is required to be provided within the FEHB for women proven to possess one of the risk factors.

Barriers to Improving Maternal Mental Health Care

There are several barriers to improving in this field of perinatal depression care. First and foremost, stigma is pervasive regarding mental health, especially as it pertains to maternal mental health. Perinatal depression is often left untreated as women can feel ashamed about seeking help, and hold

concerns about being judged by others to be a "bad mother" if they acknowledge that they are battling depression (Thorsteinsson, 2018). This is due in part to societal pressures regarding pregnancy and the overall perception that mothers should feel positive emotions after giving birth (Ruybal & Siegel, 2019).

There is also undoubtedly a racial component underlying the stigma surrounding perinatal mental health. Women of color are disproportionately disadvantaged when seeking treatment for perinatal depression. They tend to have poorer access to high-quality healthcare information and services than white women and face overall discrimination in the healthcare system. One study found that rates of mistreatment (e.g., shouting, scolding, ignoring, and refusing requests for help) were significantly higher for female patients of color (Vedam et al., 2019). This systemic ill-treatment foments distrust which can lead women of color to be less forthcoming about their mental health struggles.

Finally, healthcare providers themselves can be a barrier. There exists a perception, especially among obstetric care providers, that since one lacks formal training in the mental health arena, then perhaps one is not equipped to initiate these conversations with one's patients. Olson et al. confirm this, finding that providers actively limit their involvement in conversations regarding mental health because of incomplete knowledge and training (Olson et al., 2002). Breedlove and Fryzelka support this finding, noting that up to 50% of providers reported not feeling confident in their ability to diagnose and treat perinatal depression (Breedlove & Fryzelka, 2011).

When factoring in the pervasive stigma associated with mental health, one can see how both parties involved - both mother and provider – are unfortunately disincentivized to initiate these conversations that are so desperately needed.

Prenatal Immunization

Overview

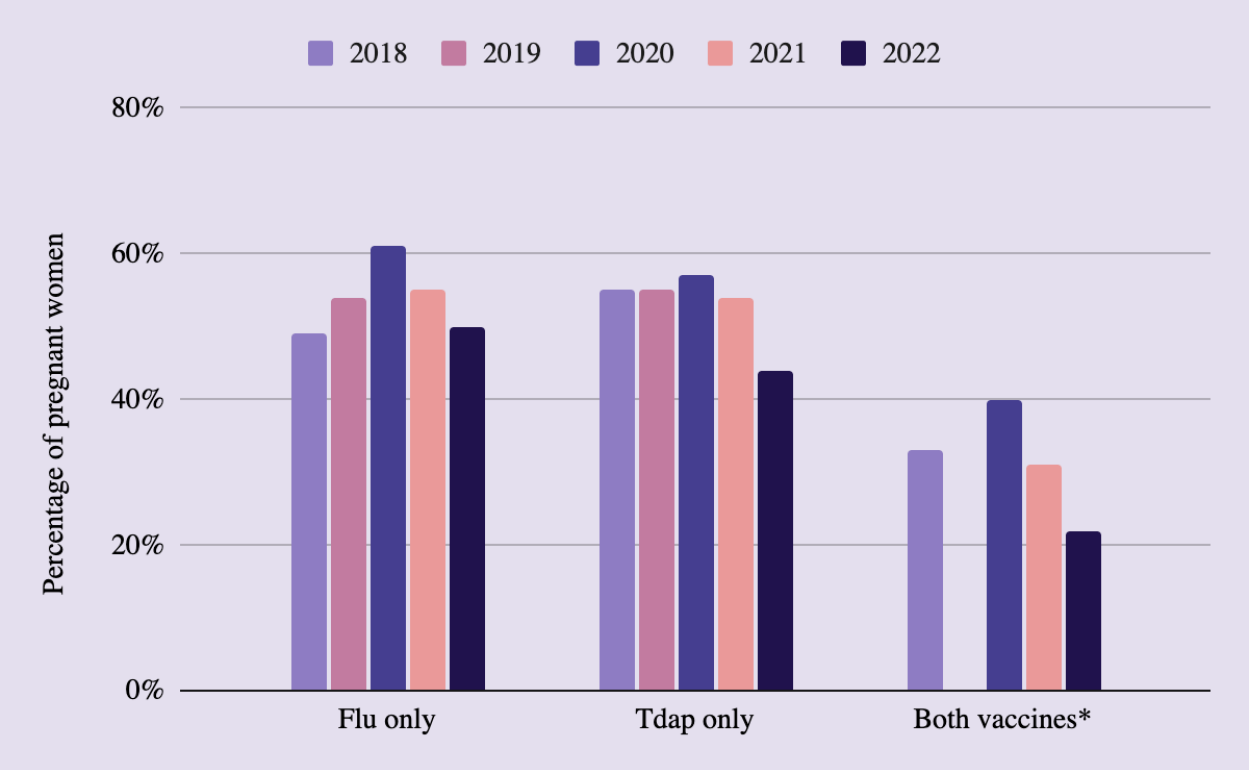
Both influenza and pertussis (a.k.a. whooping cough) are deadly illnesses that can have devastating consequences on a newborn baby. The infants themselves are too young to receive the vaccines until they are six months old. For these reasons, both the World Health Organization (WHO) and the Center for Disease Control (CDC) recommend that pregnant women receive both of these vaccines during every pregnancy since they can transfer sufficient antibodies to the infant and effectively convey immunity during this critical time of vulnerability.

Historically, only about a third of pregnant women receive *both* tetanus, diphtheria, and acellular pertussis (Tdap) and influenza vaccines as recommended during their pregnancies (Gidengil et al., 2021). Within the FEHB population specifically, the trends for low prenatal immunization uptake also apply. For example, OPM's most recent automated data collection (ADC) findings from 2017 show that only 27% of enrolled women received the Tdap vaccine during their pregnancy.

Unfortunately, these statistics are part of a greater trend of decreasing prenatal immunization rates. As Figure 2 demonstrates, CDC data shows that total coverage among pregnant women for the flu and Tdap vaccines have each fallen by about 10 percentage points in recent years (Kahn et al., 2022). More concerningly, the percentage of women receiving both vaccines as recommended during their pregnancy has drastically declined, with only 22% of women reporting being properly immunized in 2022 (Kahn et al., 2022). The reasons for this decline are many, with a strong driver potentially being

the COVID-19 pandemic. The recent politicization and hyper-polarization of vaccines during the pandemic could explain in part the declining trends in prenatal immunization rates. Regardless, the data still shows that pre-pandemic, vaccination coverage levels were suboptimal.

Figure 2: Trends in Vaccination Coverage Among Pregnant Women in the U.S., 2018-2022



Data Source: CDC Internet Health Survey Data (see "Appendix" for specific data sources for each year)
**No data was reported for "Both vaccines" in 2019*

Consequences

For both of these diseases, pregnant women and newborns are among the most vulnerable populations to serious adverse consequences. Pregnant women are at higher risk of severe illness and are at a higher risk of hospitalization due to influenza infection compared to non-pregnant individuals (Mertz et al., 2017). Children younger than 6 months old have the highest risk of being hospitalized and developing serious flu-related complications (e.g., pneumonia, dehydration, brain dysfunction, etc.) (CDC, 2022). The CDC estimates that flu-related hospitalizations among children younger than 5 years old can range from 6,000 to 27,000 in a given year in the U.S. (CDCa, n.d.). Chaves et al. point out that most hospitalizations occur in otherwise healthy infants (75%) - thus the virus can affect infants and mothers across the health spectrum (Chaves et al., 2014). Beyond hospitalizations, Rasmussen et al. find that newborn infants born to mothers with influenza during pregnancy are at increased risk of negative outcomes such as preterm birth and low birth weight (Rasmussen et al., 2012). For all of these conditions, the risk increases significantly if one is unvaccinated. Therefore, the literature is clear that contracting influenza either in the prenatal or postpartum periods, especially when unvaccinated, can have significant effects on both the mother and the fetus.

The statistics for the consequences of pertussis are equally daunting. As of 2017, the CDC reported about 19,000 cases of pertussis, but the organization warns that cases have been rising over the last few decades (Krisberg, 2020). The condition can cause pneumonia, seizures, brain damage, and in extreme cases, death (WADOH, n.d.). Nearly half of the babies younger than 1 year old that get whooping cough need care in the hospital and 1 out of 100 babies who get treatment in the hospital die (CDCb, n.d.). Castagnini and Munoz note that when in hospital, infants struggling with pertussis are more likely to have severe courses of stay (e.g., need mechanical ventilators and intense respiratory equipment) and face higher chances of mortality and further complications compared to infants with non-pertussis respiratory illnesses (Castagnini & Munoz, 2010). With such a relatively high mortality rate, pertussis prevention through immunization is paramount.

Costs

As previously mentioned, there are thousands of cases of influenza and pertussis in the U.S. each year. The annual influenza cost burden, including both direct costs to the national healthcare system and indirect costs to society, is estimated to be over $11 billion in the U.S. (Putri et al., 2018). For children under 5 years old in particular, the national cost burden of influenza is nearly $1 billion (Putri et al., 2018). Fairbrother et al. note that the mean direct cost of each child hospitalized due to influenza in 2010 was $5402 and that implementation of more rigorous vaccination policies would likely reduce the cost burden (Fairbrother et al., 2010). A 2012 study by the CDC echoes these findings, noting that parents taking care of influenza-stricken young children had medical expenses ranging from $300-$4,000 and missed dozens of hours of work (Ortega-Sanchez et al., 2012). This study also notes that there were no significant differences between the medical costs of hospitalized children who had underlying risk factors for severe cases of illness and those who did not, meaning that all parents should be wary of the disease and expect to bear similar costs.

As for pertussis, Davis and Kurosky investigated the specific estimates of costs per admission and length of stay for severe infections. They found that infants struggling with pertussis had results on these measures that were more than double those observed for non-pertussis hospitalizations (Davis & Kurosky, 2014). Thus, severe influenza and pertussis infections can pose significant elevated medical costs, lost wages, and costs to productivity for the mother and family.

Beyond these monetary costs, it is again important to note the more abstract, psychological costs of these conditions. While not quantifiable, there are significant burdens to the mother and the family in terms of increased stress. If the mother and infant fall ill and require hospitalization due to influenza or pertussis, that is more time that they have to spend interacting with the healthcare system in a taxing environment. All of these costs interact to create an environment that is not conducive to the holistic health and well-being of the mother or infant.

Vaccination Coverage in the FEHB

While specific benefits can vary across insurance Carriers and plans, influenza and Tdap vaccines are typically provided at no cost to beneficiaries within the FEHB. They are often fully covered under the "Preventive Care, Adult" benefits section of the Plan Brochures.

Barriers to Increasing Prenatal Immunization Rates

There are various reasons for the suboptimal uptake of these vaccines among mothers-to-be. Overall, there seems to be a knowledge gap between providers and their patients, exacerbated by a lack of uniformity in providers recommending the vaccine.

A common reason cited by women for not getting the Tdap vaccine, when given the opportunity of hindsight, was not knowing that it was recommended for every new pregnancy (Hunt, 2019). Furthermore, for pregnant women to properly convey immunity to their babies, they have to receive the vaccine during a specific time frame (between 27-34 weeks of pregnancy). Thus, there is a very narrow window for action, and unfortunately, many new mothers remain simply unaware of the vaccines. Providers need to be forthcoming with this information and ensure that mothers are aware of the importance of getting these vaccines at the right time.

Besides not knowing about the vaccine, there are also women who actively choose not to get it, largely over concerns regarding vaccine safety and efficacy. Yuen and Tarrant find in their systematic review that the main barrier stopping women from getting the influenza vaccine in particular was a lack of knowledge of the risks of influenza, doubts about vaccine safety, efficacy, and benefits, and fear of adverse reactions (Yuen & Tarrant, 2014). Ultimately, concerns around vaccine safety are no new phenomenon, and given the precariousness of a pregnancy, many mothers-to-be remain more hesitant to receive additional medicine or treatments.

This is all exacerbated by providers who vary in recommending the vaccine to their patients. Providers themselves may lack sufficient knowledge on the safety and efficacy of these vaccines and for that reason may be less likely to recommend them to their patients, especially given the politicization of vaccines in recent years. CDC data shows that up to 25% of pregnant women do not get informed about or referred these vaccines throughout the course of their pregnancy by a provider (CDC, 2019). Again, this could be due to the provider's own concerns regarding the vaccines or other barriers such as misperceptions related to their patients' preferences for vaccination during pregnancy, vaccination not being part of their typical practice, and uncertainty about who bears the responsibility for vaccine-related discussions with pregnant women (Macdougall & Halperin, 2016). These significant information barriers regarding both parties will have to be overcome to ensure progress in this field.

Main Mechanisms for Alternatives

The first mechanism for each alternative involves **advocacy through OPM's Call Letter**. OPM's Call Letter for benefits and proposals is an annual document that highlights the organization's priorities and signals to Carriers which areas they would like to see improvements in. The last Call Letter was published in March 2023 and echoed the goals of previous Call Letters in terms of its central asks regarding maternal health. These included:

- **Prenatal and postpartum support:** "OPM encourages FEHB Carriers to consider expanding coverage and services in support of prenatal and postpartum care including but not limited to childbirth education classes, group prenatal care, home visiting programs or home health care during pregnancy and postpartum, and care management for high-risk pregnancies. OPM also encourages FEHB Carriers to amplify communication efforts to FEHB members who are either pregnant or of childbearing age."
- **Innovative methods of improving maternal health:** "OPM encourages FEHB Carriers to explore and utilize innovative methods to improve overall maternal outcomes"

OPM cannot directly mandate that providers act in a certain way – that is largely left to the Carriers. However, having OPM call for expanded benefits in a certain area can certainly steer the dialogue and strongly signal federal healthcare priorities to the Carriers.

Furthermore, each of these alternatives will include **adopting a corresponding National Committee for Quality Assurance (NCQA) measure**. These measures are used by OPM to analyze the performance of their Carriers during their annual Plan Performance Assessment (PPA). The PPA is an annual review of the insurance Carriers within the FEHB that revolves around a predetermined set of NCQA and HEDIS (Healthcare Effectiveness Data and Information Set) measures. These metrics are a set of standardized performance measures that allow consumers to compare FEHB health plan performance to benchmark percentiles of plan performance. How the PPA process works is that the plans are required to report to OPM how well they perform on a given measure. These measurements are then scored and ranked in relation to an industry standard. Finally, all of this information is made publicly available so that consumers and beneficiaries can ideally choose the best plan for them.

If a new measure is adopted, it provides an opportunity for plans to be naturally incentivized to take steps to improve their performance in this regard, especially if performance is initially below the industry benchmark. The implementation of a new data measure inherently reflects the priorities of OPM and what they feel is important to be paying close attention to in monitoring performance.

Criteria

Efficacy

This criterion is defined as the extent to which each alternative has been proven effective in preventing, identifying, or treating a given health condition. This criterion will be measured on a scale of *high*, *medium*, or *low*. A high-ranking alternative in terms of this criterion would be one that has a strong, rigorous, and non-contradictory evidence base that supports the initiative's potential in improving maternal health outcomes.

Cost-Effectiveness

This criterion is defined as to what extent the alternative offers net benefits in relation to net costs. To quantify cost-effectiveness, this report will utilize a threshold based on dollars per quality-adjusted life-year. In the U.S., one QALY most commonly has an estimated value of between $50,000-$150,000 (Smith, 2019). Evidence in recent years has tried to streamline the threshold further, with Vanness et al. establishing that the most likely threshold is between the range of $100,000-$150,000 per QALY (Vanness et al., 2021). Thus, this report will deem an intervention as cost-effective if it falls below this maximum willingness to pay limit of $150,000 per QALY. A high-ranking policy in terms of this criterion would be one that minimizes costs while maximizing optimal health outcomes and has solid evidence backing.

Administrative Feasibility

This criterion is defined as the likelihood or ease with which OPM or associated entities can enact the policy successfully and effectively. Since this is a qualitative criterion, it will also be evaluated on a scale of *high*, *medium*, or *low*. The extent to which each alternative will need to garner action from various stakeholders, and how complex these interactions will be, will factor into administrative feasibility. A high-ranking policy in terms of this criterion would be an alternative that can be easily understood by all major parties involved and implemented in accordance with a clear vision.

Equity

This criterion is defined as the extent to which each alternative addresses issues of equity and disproportionate impacts. The healthcare system is rife with disparities, and it is important that OPM, as one of the leading entities for insurance in the country, paves the way for a more fair and just system. This criterion will also be evaluated on a scale of *high*, *medium*, or *low*. A high-ranking policy in terms of this criterion would hopefully have strong impacts in dismantling historic inequities and be able to better serve traditionally marginalized individuals.

Alternatives

Alternative #1: Focus on Improving Prenatal Depression Prevention, Screening, and Follow-up Care

Preview of Main Asks:

1. OPM could call for its Carriers to incentivize more comprehensive mental health training for all its obstetric providers.
2. OPM could promote a universal antepartum screening model
3. OPM could adopt the NCQA measure for "Perinatal Depression Screening and Follow-up"

The importance of targeting prenatal depression in particular stems from the belief that the earliest possible prevention of a worsening of symptoms can have maximum benefits for both mother and infant. Furthermore, it is rooted in the fact that prenatal depression is an independent predictor for developing postpartum depression and thus subsequent negative health outcomes (Pearson et al., 2013). To improve in the field of prenatal mental health care, OPM should leverage its resources to try and remove the main barriers that stop women from being screened during the prenatal period and/or receiving diligent follow-up and treatment after a positive screening result.

Firstly, to overcome information barriers, **OPM could call for its Carriers to incentivize more comprehensive mental health training for all its obstetric providers**. As previously discussed, one significant reason that conversations regarding mental health go unhad between providers and pregnant women is that clinicians feel under-equipped to have these discussions. However, it is imperative that providers are willing and able to have these conversations. If a patient is struggling with depressive symptoms, they may not know how to start the dialogue and ask for help. Medical providers need to be proactive rather than reactive and be willing to have open and honest conversations regarding mental health. Carriers can better ensure this by offering mental health training and resources to their providers.

Another significant barrier identified previously in this report is the pervasive stigma surrounding mental health. Patients may be less likely to disclose their mental state due to fear of judgment from others or shame in themselves. To operationalize this goal, **OPM could promote a universal antepartum screening model.** As aforementioned, routine screening of depression in the antepartum period is underdone and not mandatory for all women. Per the 2019 USPSTF recommendation, OPM only requires that women proven to already possess one of the risk factors for perinatal depression be screened during the perinatal period. However, many women not in these risk categories can still struggle with and develop perinatal depression - it is specifically these women that need additional targeted help within the FEHB population.

Several researchers and national health organizations have called for the adoption of universal antepartum depression screening models. Encouraging universal screening could ensure uniformity and compliance among providers and help break down stigma barriers as screening would routinely apply to all. One study by Gordon et al. (2006) develops the universal antepartum screening model. Their system revolves around partnerships between private physicians, mental health providers, and outpatient care. Specifically, the program:

1) developed a network of existing community mental health providers to accommodate screen-positive referrals
2) created a 24/7 hotline staffed by mental health workers to respond to urgent/emergent patient needs
3) provided nursing and physician education via a comprehensive curriculum on perinatal depression
4) facilitated outpatient depression screening that included a centralized scoring and referral system.

This model shows how universal screening relies on the integration of care for more comprehensive and high-quality maternal care. A network of professionals would be necessary to develop this infrastructure.

Finally, **OPM could adopt the NCQA measure for "Prenatal Depression Screening and Follow-up".** This measure would analyze "The percentage of deliveries in which members were screened for clinical depression while pregnant and, if screened positive, received follow-up care" (NCQAa, n.d.). Adopting this measure would signal that prenatal depression screening and follow-up are important to OPM and encourage better performance from its Carriers.

Alternative #2: Focus on Improving Postpartum Depression Prevention, Screening, and Follow-up Care

Preview of Main Asks:

1) OPM could encourage its Carriers to adopt the Reach Out, Stand Strong, Essentials for New Mothers (ROSE) program among its providers.
2) OPM could adopt the NCQA measure for "Postpartum Depression Screening and Follow-up"

Since depression in the prenatal period is such a strong risk factor for depression in the postpartum period, many of the interventions for Alternative #1 could indirectly apply to this avenue of focus. As already discussed, preventing and targeting prenatal depression can have spillover benefits in terms of improving postpartum depression (PPD) prevention, screening, and follow-up.

In terms of unique methods for improving prevention and treatment for PPD, **OPM could encourage its Carriers to adopt the Reach Out, Stand Strong, Essentials for New Mothers (ROSE) program among its providers.** The ROSE program is an interpersonal therapy (IPT) initiative that has been proven effective by the USPSTF in preventing PPD. IPT revolves around recognizing the importance of situational factors and contextual influences on one's feelings and behaviors. IPT is ideally suited for preventing PPD because it focuses on the "important interpersonal changes and challenges women experience during the perinatal and postpartum period" (Grigoriadis & Ravitz, 2007). As Figure 3 shows, the ROSE program consists of 4 to 6 sessions during pregnancy and postpartum, covering topics such as stress management, the development of a social support system, role transitions, and types of interpersonal conflicts common around childbirth (USPSTF, 2019). The program has core aspects that are consistently included, but there are also a series of flexible elements that allow for the provider to implement the model however best fits the context and needs of the organization.

Figure 3: ROSE Program Model

Standard ROSE Program Outline		
During Pregnancy	Session A	Interpersonal rationale for program, course outline, ground rules, signs/symptoms of "baby blues" and PPD.
	Session B	Stress management skills, managing the transition to motherhood, identifying positive supports.
	Session C	Teaches types of interpersonal conflicts common around childbirth and role plays techniques for resolving them.
	Session D	Skills for resolving interpersonal conflicts, setting goals, review
Postpartum Booster		Reviews/reinforces previous sessions, problem-solves difficulties using skills, reviews available resources

ROSE Core Elements	ROSE Flexible Elements
Psychoeducation on: • PPD • Managing stress in transition to motherhood • Social support as a buffer against PPD • Relevant postpartum resources Teaching: • Communication skills via role plays • Stress management skills • Building and enhancing social skills Review/reinforce skills at postpartum session	• Group vs. individual • Office vs. home visit • Remote telehealth or phone • Time during pregnancy • Order of sessions • Open enrollment of group • Missed sessions can be made up • Sessions can be split into shorter pieces or lumped together

Information Source: Care New England, n.d.

The ROSE program has been proven effective in reducing the likelihood of developing PPD, especially among women proven to possess one of the risk factors (USPSTF, 2019). For example, studies show that the program can reduce cases of PPD by half among low-income pregnant women (Women & Infants, n.d.). By targeting several of the known risk factors for PPD, the ROSE

program is a powerful tool for prevention and subsequent treatment. If encouraged and adopted throughout the FEHB to all women, beyond just those with risk factor status, a wider sector of the undiagnosed population could be reached.

Furthermore, **OPM could adopt the NCQA measure for "Postpartum Depression Screening and Follow-up"**. This measure would analyze "The percentage of deliveries in which members were screened for clinical depression during the postpartum period, and if screened positive, received follow-up care within 30 days" (NCQAb, n.d.). Again, if this measure were adopted, OPM would be able to gather more data on this issue and urge Carriers to take steps to ensure optimal performance.

Alternative #3: Focus on Improving Prenatal Immunization Rates

Preview of Main Asks:

1) OPM can encourage their Carriers to promote vaccine safety information-sharing among providers
2) OPM could adopt the NCQA measure for "Prenatal Immunization Status"

This alternative focuses on increasing the uptake of the flu and Tdap vaccines by mothers by overcoming the various barriers that impede prenatal immunization. As previously discussed, knowledge and information gaps regarding the safety and efficacy of the vaccines seem to be the main drivers for low uptake. This is exacerbated by a lack of uniformity among providers recommending the vaccine.

To address each of the aforementioned barriers, **OPM can encourage their Carriers to promote vaccine safety information-sharing among providers.** This could consist of adopting vaccine information campaigns or any other initiative with the overall goal of generating productive dialogue regarding vaccine safety. This report will explore in the following section the efficacy of the vaccines themselves and demonstrate why any safety concerns are unfounded.

This alternative specifically targets providers because is imperative that clinicians carefully outline to mothers the safety and efficacy of these vaccines, and reiterate that the true danger lies in not ensuring proper immunity. A 2019 CDC report emphasizes the power of provider recommendations to patients regarding vaccinations. The data shows that when providers offered the vaccines to their patients, take-up increased by over 10 percentage points for each vaccine (from 54% to 66% for the flu vaccine and from 55% to 70.5% for the Tdap vaccine) (NASHP, 2019). By educating providers themselves, OPM can ensure that concerns regarding vaccine safety and misinformation are addressed at the source. This will hopefully empower providers to be more forthcoming in recommending the vaccines and dispel subsequent concerns among mothers-to-be.

Finally, **OPM could adopt the NCQA measure for "Prenatal Immunization Status"**. This measure would analyze "the percentage of deliveries in the measurement period in which women received influenza and tetanus, diphtheria toxoids and acellular pertussis (Tdap) vaccinations." (NCQAc, n.d.). Again, all of OPM's Carriers would be held accountable under this measure and have to clearly report their performance in this area. Having this information and clear data could lead to further avenues to solve this problem.

Findings

Alternative #1: Focus on Improving Prenatal Depression Prevention, Screening, and Follow-up Care

Efficacy

Evidence on the efficacy of universal antepartum screening is mixed. Findings from the Cochrane Library found that screening tools were useful in increasing provider awareness of psychosocial risk, but there was insufficient evidence that routine assessment by itself improved outcomes of prenatal mental health morbidity (Austin et al., 2008). A more recent study finds that universal prenatal screening was associated with increases in the identification of new depression diagnoses, the expected percentage of women receiving treatment, and improvements in depressive symptoms up to 6-months postpartum (Avalos et al., 2016). Therefore, universal screening may be beneficial, but only with proper treatment and follow-up.

As for the treatment of prenatal depression, many new mothers remain wary of pharmacological treatment options (i.e., antidepressants) due to safety concerns. Regarding psychosocial interventions, a meta-analysis of randomized controlled trials (RCTs) by the Cochrane Library found that "the evidence is inconclusive to allow us to make any recommendations for interpersonal psychotherapy for the treatment of antenatal depression" (Dennis et al., 2007). A more recent systematic review by Shortis et al. found promising results for the use of cognitive behavioral therapy (CBT) in treating antepartum depression. CBT focuses on changing behavior by recognizing negative thought processes as they occur and analyzing what leads to them. The researchers found that CBT led to large improvements in depression scores in the treatment group compared to the control, and of the trials that included postpartum follow-up, those benefits were sustained (Shortis et al., 2020).

Overall, there does seem to be some evidence for benefits related to prenatal depression prevention and treatment, but the literature, on the whole, is not expansive and robust. Some contradictory findings were found and it was challenging to find evidence for interventions specific to prenatal mental health care.

Cost-Effectiveness

There is a gap in the literature on the cost-effectiveness of interventions for antenatal depression specifically. A 2018 systematic review from the U.K. acknowledges this fact through their evaluation of the cost-effectiveness of interventions for the prevention of perinatal depression across 8 different studies. The researchers concluded that future research is "necessary to address the lack of economic evidence for interventions for antenatal depression" (Camacho & Shields, 2018).

A recent study by Heslin et al. attempted to partly fill this gap, investigating the cost-effectiveness of various methods of screening for prenatal depression. They find that each approach they investigated had a higher probability of being cost-effective than the no-screen option across a variety of QALY thresholds. Specifically, at the commonly used threshold of £20,000-£30,00 per QALY, all three screening options had a higher probability of being cost-effective than the no-screen option (Heslin et al., 2022).

Therefore, while there is some evidence to suggest net economic benefits for prenatal depression care (specifically the cost-effectiveness of screening), significant gaps in the literature persist.

Administrative Feasibility

Improving in this field is difficult administratively for a variety of reasons. For example, while adopting the universal antepartum screening model could be incredibly beneficial, OPM has little direct leverage over providers and their practices. As aforementioned, the USPSTF only recommends that women shown to possess one of the risk factors for developing perinatal depression be screened, and this is the standard that OPM currently holds its plans to. OPM cannot explicitly mandate providers to change their practices (unless backed by a USPSTF recommendation); it can only nudge behavior through advocacy.

Additionally, even if Carriers were to adopt universal antepartum screening, the model developed by Gordon et al. (2006) highlights how complex the infrastructure would be. The model would necessitate stakeholders across a wide variety of sectors to work together in both inpatient and outpatient settings. While this model is just an example, it would almost certainly require significant collaboration.

Furthermore, it remains difficult for providers to distinguish between depressive symptoms during pregnancy and other general physiological changes that occur during this time period (i.e., mood changes, fatigue, reduced appetite, etc.). The USPSTF acknowledges in its recommendation for perinatal depression screening that "there is no accurate screening tool for identifying women at risk of perinatal depression and who might benefit from preventive interventions", especially in the prenatal period (USPSTF, 2019). The most commonly used screening tool is the EDPS (Edinburgh Postnatal Depression) scale. The EDPS scale is a questionnaire that is used to diagnose maternal depression, but it only asks women how they presently feel/have felt in the past 7 days. Therefore, it is limited in the sense that it can only assess current depressive symptoms as they manifest. Unless women are forthcoming about possessing one of the risk factors, or providers can screen women at the right time as their symptoms present themselves, prenatal depression can continue to go underdiagnosed.

Finally, as previously discussed, most providers feel unequipped to have conversations regarding mental health since many lack formal training in the mental health arena. Even if OPM were to promulgate additional information and resources regarding the prevalence of prenatal depression, stigma and attitudes around prenatal mental health may still pervade. For that reason, providers may remain less inclined to initiate these conversations and probe their patients further.

Ultimately, all these factors converge and make it difficult to know which is the best channel to target to begin tackling this issue.

Equity

A 2016 systematic review summarizes the existing literature concerning racial-ethnic disparities in the rates of antenatal depression in the U.S. It finds that the prevalence of antenatal depression is consistently higher among Black and Hispanic populations, with some studies finding prevalence rates for prenatal depression as high as double among women of color compared to white women (Mukherjee et al., 2016). Differences in income levels might play a role in these disparities, considering that low socio-economic status is an important risk factor for perinatal depression as

well as depression in general (USPSTF, 2019). Thus, improving prenatal depression prevention, screening, and follow-up could help these mothers who need it most.

Alternative #2: Focus on Improving Postpartum Depression Prevention, Screening, and Follow-up Care

Efficacy

For postpartum depression care, the literature in this field is limited in methodological quality and lacks robust and definitive evidence for long-term effects.

The research confirms that screening alone is not enough – it is effective in improving recognition of the disorder but any improvement in clinical outcomes requires enhanced care that ensures adequate treatment and follow-up (Gjerdingen et al., 2007). Even when treatment is administered, the evidence for its effectiveness lacks rigor. A meta-analysis of RCTs by the Cochrane Library found evidence suggesting that psychosocial and psychological interventions are an effective treatment for PPD, but the "methodological quality of the majority of trials was…not strong" (Dennis & Hodnett, 2007). Similarly, and as previously mentioned, the USPSTF's more recent analysis of the ROSE program determines that the model is a powerful interpersonal therapy treatment for perinatal depression and can prevent the onset of PPD (USPSTF, 2019). However, their findings lacked methodological rigor, as the trials were limited to pools of at-risk women only and exhibited small-studies effects. Finally, a meta-analysis finds some evidence for the long-term effects of CBT as a treatment for PPD, but again, the findings were not conclusive across all studies included and the samples were limited due to uneven quality and sample size (Huang et al., 2018).

Beyond methodological quality, the literature lacks robust long-term and follow-up data for the effectiveness of postpartum interventions. Huang et al. investigated the short- and long-term effectiveness of mother-infant psychotherapy (MIP). MIP is one of the preeminent forms of psychotherapy often used to prevent and treat postpartum depression, focusing on improving the mother-infant relationship and promoting attachment. They find that the treatments appear to be effective for the treatment of PPD in the short term, but the results are not conclusive for long-term benefits (Huang et al., 2020). Even in studies that do seem to find long-term beneficial results for the treatment of PPD, their findings again have to be taken with caution considering certain experimental design elements (low power, small sample size, etc.) (Kersten-Alvarez et al., 2010).

Cost-Effectiveness

Wilkinson et al. estimated the cost-effectiveness of screening for and treating postpartum depression. This study found that PPD interventions were only $13,857/QALY gained, which is far below the maximum willingness to pay threshold of $50,000-$150,000/QALY (Wilkinson et al., 2017). They concluded that these interventions produced more healthy women at reasonable costs under a wide range of willingness-to-pay thresholds (Wilkinson et al., 2017). Their findings remained significant even under extensive sensitivity analyses.

While those results are promising, there is still mixed evidence regarding the cost-effectiveness of postpartum depression screening and interventions. A previous study by Paulden et al. conducted in the U.K. concluded that screening for postpartum depression had a cost ratio of £41,103 per QALY gained compared with routine care, which was above their identified cost-effective threshold of £20,000-£30,000 per QALY gained (Paulden et al., 2009). Ultimately, they concluded that the use of

formal identification methods for detecting postnatal depression "does not represent value for money" for the U.K. National Health Service (NHS) (Paulden et al., 2009). Hewitt and Gilbody's systematic review of postpartum screening seems to agree that the evidence is inconclusive, stating that "evidence surrounding the clinical and cost-effectiveness of postnatal depression screening is lacking and further research is required in this area to address this gap" (Hewitt & Gilbody, 2009).

Thus, while different countries naturally have vastly different health contexts, on the whole, the evidence regarding the cost-effectiveness of PPD interventions seems to be mixed and contains contradictory findings.

Administrative Feasibility

Similar to the administrative concerns regarding Alternative #1, a lack of industry-wide consensus and provider autonomy are significant obstacles to this alternative.

Firstly, there is no consensus on the ideal time to perform screening for PPD and there is evidence of widespread clinical variation. Moraes et al. investigated diagnostic methods in the postpartum time frame. They observed significant variance, finding that "almost half of the studies included explored the range of from birth to 3 months postpartum, followed by more than one-third of the sample focusing on the range of 7 to 12 months" (Moraes et al., 2017). In short, 13 articles had providers that screened during the first 6 months (59%) while only 8 articles focused on providers that (36%) screened up to 1 year (Moraes et al., 2017). This is significant because it is known that PPD symptoms can manifest late after childbirth and last up to a year after delivery. This wide variance of screening times could have impacts on whether or not women choose to utilize treatment services and ultimately treatment effectiveness.

Furthermore, providers have significant discretion in what types of treatments they prefer for treating postpartum depression. There is no universally recognized treatment for PPD - the most common ones are pharmacological interventions (i.e. antidepressants) or psychosocial interventions (e.g. CBT or IPT). Clinicians have different preferences, and although there is significant evidence regarding the effectiveness of the ROSE program, especially in the short term for managing and reducing depressive symptoms, OPM can only encourage its adoption. If providers prefer to prescribe antidepressants to their patients struggling with PPD, then the alternative might be a non-starter. Therefore, similar to Alternative #1, there is wide variance across providers, and it would be very difficult for OPM to homogenize their practices.

Finally, again similar to Alternative #1, integrated care models are difficult to implement on such a large scale. Initiatives like the ROSE program work best with a wide plethora of providers and clinicians working together. Many different stakeholders would have to collaborate for optimal maternal health outcomes, which can prove difficult in a program as large as the FEHB.

Equity

Like Alternative #1, the realm of postpartum depression screening and care is rife with disparities. Women of color are more likely to suffer from postpartum depression, as new mothers of color face rates of PPD nearing 40% compared to the rate of approximately 13% that most new mothers face (Burrwell, 2016). Beyond the prevalence of morbidity, new mothers of color also face inequities in terms of screening and treatment. One report finds that compared with white women, "African-American women were 36 percent less likely, and Native American, Hawaiian, Alaska Native, and multiracial women were 56 percent less likely" to be screened (Iyer, 2021). Further research shows

that Black and Hispanic women face significantly lower odds of initiating treatment for postpartum mental health care, are less likely to receive follow-up treatment, and are less likely to refill an antidepressant prescription when compared to white women (Kozhimannil et al., 2011). These statistics are incredibly concerning since it is clear that the women who most desperately need medical treatment in this realm are not receiving the help they need.

Alternative #3: Focus on Improving Prenatal Immunization Rates

Efficacy

There is broad consensus across the literature that prenatal immunization against influenza and pertussis is safe and effective.

As for the influenza vaccine, a systematic review by Ortiz et al. found no major safety concerns associated with immunization (Ortiz et al., 2011). A more recent "International Consensus Statement" from a wide cohort of global researchers echoed these findings, noting that the vaccines are "safe and not associated with differences in medically attended acute events in pregnant women or adverse birth outcomes" (Abu-Raya et al., 2020). Beyond safety, research shows that the influenza vaccine reduces the risk of influenza in pregnant women significantly (Madhi et al., 2014). A 2020 meta-analysis of RCTs found that receiving the influenza vaccine during pregnancy reduced cases of influenza in newborns by approximately a third (Jarvis et al., 2020). Other studies have recorded estimates of risk reduction nearing 50% (Nunes & Madhi, 2018).

The literature also resoundingly supports the safety and efficacy of the Tdap vaccine against pertussis. Halperin et al.'s study shows the effectiveness of prenatal immunization in providing high levels of antibodies against pertussis to newborns and finds no significant evidence of a difference in rates of severe adverse events (Halperin et al., 2018). Not only is the Tdap vaccine safe, but also highly effective. A systematic review by Vygen-Bonnett et al. (2020) found that pertussis vaccination during pregnancy has an overall positive benefit-risk ratio and the vaccines are incredibly effective in preventing serious illness. Specifically, "vaccine effectiveness against pertussis in infants of immunized mothers ranged from 69 to 91% for pertussis prevention, from 91 to 94% for prevention of hospitalization and was 95% for prevention of death due to pertussis" (Vygen-Bonnet et al., 2020). Other studies support these conclusions, with Winter & Harriman finding that infants of vaccinated mothers had a significantly lower risk of hospitalization and ICU admission if they contracted the illness compared to infants of non-vaccinated mothers (Winter & Harriman, 2016).

Since these vaccines have such significant short-term effects, their long-term effectiveness is also clear. Because infants are most vulnerable in these first few months of life, if they are able to receive sufficient immunity from their vaccinated mothers, they are experiencing potentially life-saving benefits.

Cost-Effectiveness

The research supports the cost-effectiveness of vaccines for both influenza and pertussis. A systematic review by Ting et al. found broad evidence that influenza vaccination was cost-effective, with specific studies finding the costs of vaccination to be as low as $8,000 per QALY (Ting et al., 2017). This is significantly below the commonly accepted willingness-to-pay maximum of $100,000-$150,000 per QALY, meaning that this is a very cost-effective initiative.

Chaiken et al. support the cost-effectiveness of prenatal immunization, finding that in a theoretical cohort of 4 million pregnant patients, the influenza vaccine was associated with 1632 fewer stillbirths, 120 fewer maternal deaths, and 340 fewer infant deaths (Chaiken et al., 2022). Because of this, the vaccine corresponded with savings of nearly $4 billion per year due to improved maternal and infant outcomes (Chaiken et al., 2022). Roberts et al. note that even when taking into account various probabilities of contracting an influenza-like illness, prenatal vaccination for influenza remains cost-effective (Roberts et al., 2006).

Similarly, there is evidence that prenatal immunization against pertussis is a cost-effective mechanism for delivering immunity to vulnerable newborns. Atkins et al. found that antepartum maternal vaccination incurs costs of $114,000 per QALY (which is still below the $150,000 maximum threshold) in comparison with the strategy of no vaccination (Atkins et al., 2016). They conclude that "at a total cost of $44 per dose (which includes the CDC-negotiated price of $21 per dose combined with the costs associated with administration), antepartum vaccination of mothers is 92% likely to be cost-effective" (Atkins et al., 2016). They estimate the direct protection conferred to an infant by maternal Tdap vaccination to be 89%, and thus "recommend vaccination of as many pregnant women in the United States as possible" (Atkins et al, 2016).

In conclusion, there is strong evidence for the cost-effectiveness of both types of vaccines for pregnant women, as each intervention was below the maximum threshold of costs per QALY.

Administrative Feasibility

Similar to the other alternatives, the main administrative burden is that providers have significant autonomy. A wide array of health organizations recommend the vaccines - CDC, WHO, etc. - yet it is still up to providers if and how they recommend the vaccines to their patients. However, whereas for Alternatives #1 and #2, there is a wide plethora of administrative channels and obstacles that would need to be overcome, with this alternative, it is relatively clear what the main access points are.

As previously discussed, the evidence widely acknowledges that the main reasons for low prenatal immunization uptake rates are: 1) lack of provider referral for vaccines and 2) misconceptions among patients about vaccine safety and efficacy (Yuen & Tarrant, 2014). ACOG guidelines are direct, stating that "the most effective way to increase vaccination rates is for obstetric HCPs (healthcare providers) to directly recommend and provide the vaccine for their patients" (Yuen & Tarrant, 2014). Therefore, the primary strategy advocated by researchers, and proposed in this report, is to communicate firstly with healthcare providers, and subsequently pregnant women, about the current vaccination recommendations to enhance their awareness and promote vaccination acceptance (Yuen & Tarrant, 2014).

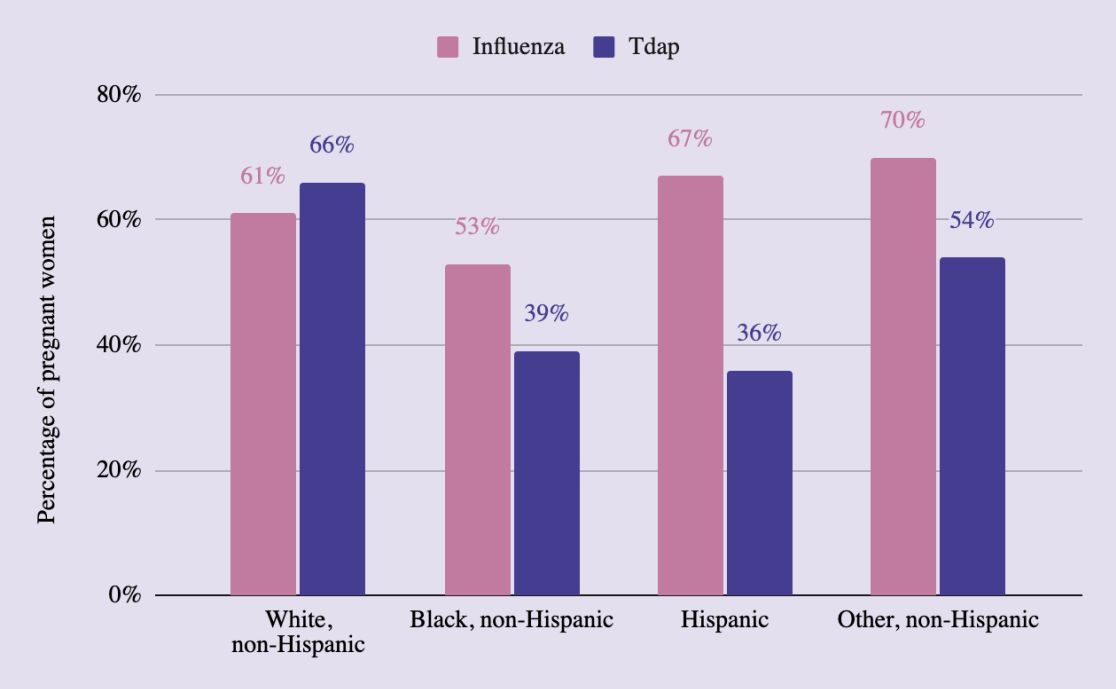
Ultimately, this alternative is more administratively feasible in the sense that there is a clear singular channel through which to pursue progress. While providers still have relative autonomy in deciding whether or not to push vaccines, the main barrier impeding progress is well-known, and therefore the goal is more straightforward.

Equity

As Figure 4 shows, racial and ethnic disparities persist in prenatal immunization and rates of uptake. When looking at the uptake of each individual vaccine in 2019-2020, Black women received both vaccines at consistently lower rates compared to other ethnic groups. Dudley et al. attribute this to

the fact that compared to white women, Black women are "less confident in vaccine safety and efficacy and less likely to perceive the risk of acquiring vaccine-preventable diseases" (Dudley et al., 2021). They also supported the notion that Black women in particular are the least confident in the safety of these vaccines and are the least likely to receive both vaccines during pregnancy compared to white women (Dudley et al., 2021). A systematic review from 2021 highlights another main driver for low vaccine uptake, stating that Black women in the U.S. are less likely to receive the flu vaccine during pregnancy due to a lower rate of provider offer or referral (Callahan et al., 2021). Therefore, working towards improvement in this field of prenatal immunization could have significant implications for improving equity, especially considering that knowledge and information gaps are most pervasive among pregnant women of color.

Figure 4: Percentage of Pregnant Women in the U.S. who Received an Influenza or Tdap Vaccine in 2019-2020, by Ethnicity



Data Source: Statista (Elflein, 2020)

Outcomes Matrix

	Prenatal Depression	Postpartum Depression	Prenatal Immunization
Efficacy	**Medium** - There is evidence of benefits, especially in the short term, but the literature overall is not expansive and robust. Furthermore, some contradictory findings were encountered.	**Medium** - There are significant gaps in the literature, limitations on studies, and there is a lack of robust long-term and follow-up data.	**High** - There is widespread consensus throughout the literature concerning the efficacy and safety of this initiative. Few contradictory studies/findings were encountered.
Cost-Effectiveness	**Low** - Significant gaps in the literature regarding interventions in this field.	**Medium** - There is evidence to support the cost-effectiveness of interventions in this field, but the literature as a whole is mixed/inconclusive.	**High** - There is significant evidence demonstrating the cost-effectiveness of interventions in this field with few limitations on studies.
Administrative Feasibility	**Low -** Variety of administrative channels needed to work through.	**Low -** Variety of administrative channels needed to work through	**Medium -** Pathway through which to take action is clearer.
Equity	**High** - There are significant racial disparities in this area; thus, working towards improvement in these fields would ideally lead to increased equity.		

Recommendation

I recommend that OPM pursue Alternative #3: Focus on Improving Prenatal Immunization Rates within the FEHB population.

Firstly, in terms of **efficacy**, I deem that the literature as a whole is strongest on the evidence for prenatal immunization. For prenatal and postpartum depression care, the literature generally supports strong short-term effects. However, in some cases, there were contradictory findings and certain studies lacked methodological rigor. Furthermore, for both realms, there is a lack of rigorous evidence on the long-term effects of depression prevention, screening, and follow-up on maternal and infant health outcomes. That is not to suggest that these interventions are not helpful and beneficial for women – it is simply that the literature as a whole needs more time to fill in these gaps. Conversely, with prenatal immunization, the research is widely in support of the vaccines' safety and effectiveness.

In terms of **cost-effectiveness**, when looking between the three, the evidence is strongest for prenatal immunization. The cost-effectiveness studies for both prenatal and postnatal depression care seemed to have more limitations and/or face significant gaps in the literature.

In terms of **administrative feasibility**, prenatal and postnatal depression care scored lower again than prenatal immunization due to the fact that they are such complex and multifaceted issues. There are various different channels that could be pursued to address these issues, and it is unclear which would be the best access point, especially considering the significance of provider autonomy. With prenatal immunization, the autonomy concern is still real and limits the ultimate feasibility of this alternative, but at least the main barrier impeding progress is clear.

All three alternatives scored highly in terms of **equity** because each alternative could have powerful implications for dismantling historic disparities. They are each aimed at different aspects of maternal health that disproportionately impact new mothers and infants of color.

Ultimately, while each of these three alternatives could have powerful ramifications in terms of improving maternal health, Alternative #3 is the strongest across all the criteria.

Implementation

Major stakeholders involved in this recommendation include a wide variety of offices within OPM's Healthcare and Insurance (HI) division, namely Program Analysis & Development (PAD) and those in charge of the annual Plan Performance Assessment (PPA). HI oversees the publication of the annual Call Letter, Technical Guidance, and what measures will be utilized in the annual PPA. Other stakeholders include individuals in the Federal Employment Insurance Operations (FEIO) division, as they oversee contracting within the FEHB.

Since the 2023 Call Letter was already published, discussions would need to start now regarding the 2024 Call Letter. As those meetings begin to happen, PAD would need to present its recommendation regarding the importance of prenatal immunization and propose putting additional focus on this area in the Call Letter. OPM can urge the Carriers to adopt vaccine information campaigns and pursue information sharing among providers.

Beyond advocacy through the Call Letter, another immediate next step HI can take is regarding the adoption of the National Committee for Quality Assurance (NCQA) measure for Prenatal Immunization for the 2024 measure year. As previously discussed, the Plan Performance Assessment (PPA) is OPM's annual review of its plans to assess performance in relation to industry standards. It does so by utilizing data metrics that allow for comparison across plans. There are currently 25 measures included in the PPA measure set. Measures do not get rotated out very frequently considering it takes time to gather data on a given metric and compare across plans. It can take years for a measure to be retired, especially if plans are seeking to improve in a given field. However, there is currently a potential spot open on the measure set, since a different measure is being considered for rotation out given the fact that OPM's plans have consistently scored well above the industry benchmark for that measure. Therefore, there is an opportunity for the proposed measure for Prenatal Immunization.

The Prenatal Immunization (PRS-E) measure would require Carriers to report the percentage of deliveries in a given year in which their beneficiaries received both the influenza and Tdap vaccinations. **Due in part to the findings of this report, the PPA team is currently moving forward with the process of advocating for the adoption of this measure**. As of March 2, 2023, OPM announced its intention of adding Prenatal Immunization Status (PRS-E) to the 2024 Plan Performance Assessment Farm Team. They circulated the news to all FEHB official plan contacts and Carriers, who have until March 24th to send feedback on this proposal. If no major opposition is identified, then the measure will officially be added to the Farm Team. The Farm Team is a collection of measures that are being evaluated for possible future scoring and addition to the permanent PPA measure set. All measures on the Farm Team must be collected for at least two years to give FEHB Carriers time to understand their performance and OPM time to assess how well the measure is working in its system. From that point, the measure is eligible to be promoted to the Clinical Quality, Customer Service, and Resource Use (QCR) permanent measure set. Therefore, ideally, data collection on PRS-E would begin in 2025.

For this measure to be adopted, firstly, there needs to be no major opposition from FEHB Carriers. Considering that the plans will likely score low on this measure (since prenatal immunization rates are so low throughout the FEHB), they may not be as forthcoming in their support for the measure. However, ideally, they will recognize this focus area as a clear opportunity for improvement,

especially considering the strong support for the vaccines' safety and efficacy highlighted by this report. To overcome this opposition, if it does come, it is important for HI and those on the PPA team to emphasize the rigorous evidence base that there is in this field. This is especially important for a PPA measure since insurance Carriers are going to be scored and evaluated based on these metrics. Data measures and their definitions need to be clear, concise, and streamlined for optimal comparison. If the evidence base is lacking for any given metric, it is difficult to enforce the strength of the measure.

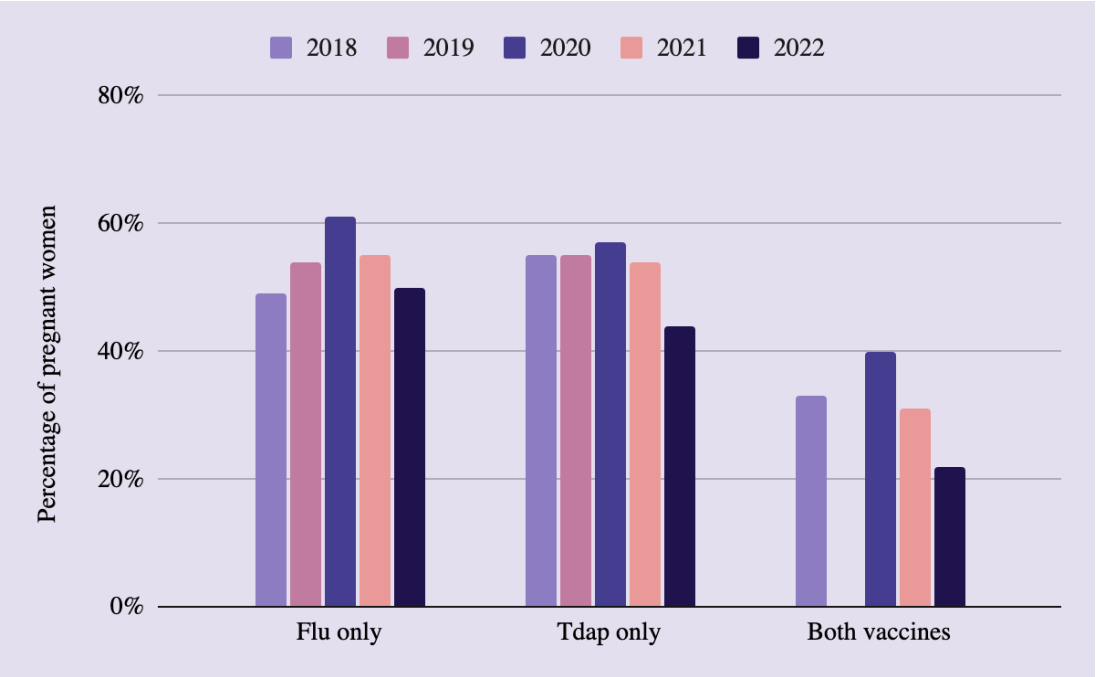
In conclusion, the adoption of the Prenatal Immunization measure is an imperative step toward progress in the realm of maternal health. If a plan is noted to be underperforming in any given measure, especially in relation to the industry benchmark, the information is made public, which then incentivizes the Carriers to take steps to improve their performance. Coupled with advocacy efforts through the Call Letter, ideally, Carriers and their providers will begin to see the importance of vaccine safety and efficacy, thus potentially benefiting the lives of thousands of women and their children within the FEHB.

Conclusion

By aiding the expansion of benefits and services surrounding maternal care, OPM can continue to ensure that all enrollees have access to high-quality care and that the federal government serves as an exemplar for maternal healthcare. Improving prenatal immunization rates is the powerful next step for OPM to pursue its goal of improving maternal and infant health outcomes among its FEHB population. Prenatal immunization for influenza and pertussis helps protect both mothers and infants from deadly diseases at such a vulnerable time in their lives. The lower the chances of the newborn getting sick from these diseases, the less stress the mother has throughout her pregnancy and the postpartum period, supporting an overall healthier maternal environment. In conclusion, by ensuring that women and infants are properly immunized, OPM will directly ensure that the lives of its maternal population and their families are better protected and cared for.

Appendix

Figure 2: Trends in Vaccination Coverage Among Pregnant Women in the U.S., 2018-2022



Source: CDC Internet Health Survey Data (2018-2022)

2018 Survey Data:

Kahn KE, Black CL, Ding H, et al. Influenza and Tdap Vaccination Coverage Among Pregnant Women — United States, April 2018. MMWR Morbidity and Mortality Weekly Report 2018;67:1055–1059. DOI: http://dx.doi.org/10.15585/mmwr.mm6738a3.

2019 Survey Data:

Lindley MC, Kahn KE, Bardenheier BH, et al. Vital Signs: Burden and Prevention of Influenza and Pertussis Among Pregnant Women and Infants — United States. MMWR Morbidity and Mortality Weekly Report 2019;68:885–892. DOI: http://dx.doi.org/10.15585/mmwr.mm6840e1

2020 Survey Data:

Razzaghi H, Kahn KE, Black CL, et al. Influenza and Tdap Vaccination Coverage Among Pregnant Women — United States, April 2020. MMWR Morbidity and Mortality Weekly Report 2020;69:1391–1397. DOI: http://dx.doi.org/10.15585/mmwr.mm6939a2

2021 Survey Data:

Kahn, Katherine, et al. (2021). Flu and Tdap Vaccination Coverage Among Pregnant Women – United States, April 2021. *CDC*. https://www.cdc.gov/flu/fluvaxview/pregnant-women-apr2021.htm

2022 Survey Data:

Kahn, Katherine, et al. (2022). Pregnant Women and Flu and Tdap Vaccination. *CDC*. https://www.cdc.gov/flu/fluvaxview/pregnant-women-apr2022.htm

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