Human Immunodeficiency Virus Testing of Pregnant Women

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Literature Review: Human Immunodeficiency Virus Testing of Pregnant Women

Many women in the United States do not get tested for human immunodeficiency virus (HIV) during pregnancy. As a result, perinatal transmission of HIV, otherwise known as mother-to-child transmission or vertical transmission, is more likely during pregnancy, childbirth (labor and delivery), or breastfeeding (through breast milk). Healthy People 2030's objective to "reduce the rate of mother-to-child HIV transmission — HIV-06" addresses this issue (HHS, 2020). The target is to reduce the rate of newly diagnosed perinatally acquired HIV infections to 0.9 per 100,000 live births (HHS, 2020).

In 2013, the US Preventive Services Task Force reported its recommendation that all pregnant women be screened for HIV infection based on the evidence that testing accurately detects HIV during pregnancy and that antiretroviral therapy (ART) can help reduce the risk of transmission (Selph, Bougatsos, Dana, Grusing, & Chou, 2019). According to the World Health Organization, in the absence of any intervention, the transmission rates can range from 15% to 45%, but this rate can be reduced to below 5% with effective interventions during pregnancy, labor, delivery, and breastfeeding (WHO, 2019). Almost half of pregnancies in the United States are unintended, so it is important that women receive the proper prenatal care and are recommended to be screened for HIV (Andrews et al., 2018). In addition, about 15% of people with HIV do not know they are infected, which indicates that all pregnant women sh10,ould be tested in order to protect themselves and their infant. There is no regular determination of the number of HIV-infected women who deliver infants in the US, but the national rate of mother-to-child transmission was last estimated as 2.2% in 2012 (Whitmore et al., 2012). Of these births, half had at least one missed prevention opportunity. According to the National HIV Surveillance Report, among infants born in the US, the overall rate of perinatally acquired HIV infections in the US was 0.8 per 100,000 live births (2018, p.12). However, there are important disparities among racial and ethnic groups. The annual rate among blacks/African Americans was 3.3, which was substantially higher than the 2018 rates among Hispanics/Latinos (0.5) and whites (0.4), as reported by the National HIV Surveillance Report (2018, p.12).

The prenatal period and the first few years of a child's life can determine long-term physical and mental health. Infant mortality from infectious diseases and malnutrition is low in the US and effective alternatives for feeding are readily available (Chadwick & Ezeanolue, 2020). However, there is evidence that HIV exposure in utero or during the postnatal period affects the

development of the infant's immune system and other organ systems (Sugandhi et al., 2013). In addition, HIV exposed infants are more susceptible to congenital or acquired infections with TB, herpes, and cytomegalovirus (CMV) than infants unexposed (Sugandhi et al., 2013). Prevention of perinatal transmission of HIV is crucial as the age-adjusted HIV-related death rate is 4.7 per 1,000 people (Bosh et al., 2020). There is currently no cure for HIV, so prevention of mother-to-child transmission of HIV is critical.

Intrapersonal Factors

Intrapersonal factors can be an essential element in explaining health behavior and the basis for health interventions. Intrapersonal factors include beliefs, attitudes, knowledge, socioeconomic status, and race. Some of these intrapersonal factors are considered as barriers related to HIV testing among pregnant women. For example, pregnant women who believe they are low risk for HIV are less likely to get tested, especially when their provider assesses them as low risk as well (Rothpletz-Puglia et al., 2012). In addition, many pregnant women are reluctant to get HIV tested because of fear (Rothpletz-Puglia et al., 2012). Some fears include fear of HIV infection, fear of confirming partner infidelity, and fear of judgment from medical providers (Rothpletz-Puglia et al., 2012). One of the most substantial factors hindering perinatal HIV screening is the fear of the infection itself, or the belief that HIV is a death sentence (Rothpletz-Puglia et al., 2012). Many women refuse testing because they fear they will test positive and will die. This fear coincides with a lack of knowledge about HIV. Many pregnant women are unaware of the advances in HIV care and treatment, like ART, so they do not get tested. Pregnant women may be more inclined to screen for HIV if they were more educated on prevention tactics and possible treatments, and also the benefits of testing.

Socioeconomic status influences perinatal HIV testing as well. Low-income pregnant women are less likely to receive HIV screening, as they are less likely to get perinatal care. However, Medicaid has reduced this affect by increasing access to perinatal care for low-income pregnant women (Lee King & Pate, 2014). As a result, many states have adopted the prenatal HIV testing opt-out approach, which tests pregnant women for HIV unless they request not to be screened. This approach is used to increase perinatal HIV testing. The implementation of this policy has helped women of low socioeconomic status, but it does not eliminate potential racial and ethnic disparities in perinatal HIV transmission (Lee King & Pate, 2014).

Race also affects HIV testing rates among women. A study using the Pregnancy Risk Assessment Monitoring System data from 36 states and New York City found variances in perinatal screening rates among certain subpopulations of women (Koumans et al., 2018). Married, multiparous, white, non-Hispanic women were 23% less likely to report being tested for HIV while pregnant compared to other women (Koumans et al., 2018). This may be because women in this subcategory are considered "low risk" for HIV, so they believe they are not susceptible to it. Nevertheless, African American and Latina women are disproportionately affected by HIV. In 2018, the CDC Surveillance Report stated that African Americans and Hispanics/Latinos accounted for 69% of HIV diagnoses, but they only comprised 31% of the US population (CDC, 2018). In addition, infants born to African American women with HIV are six times more likely to be infected with HIV, and infants born to Latina/Hispanic women with HIV are approximately two times more likely to become infected with HIV (Lee King & Pate, 2014). This is due to the fact that pregnant African American and Latina women are less likely to receive prenatal care, thus they would not receive HIV testing. Additionally, Asian Americans, specifically Hmong women, receive perinatal HIV screening at lower rates. A study showed that this is partly due to the fact that there is a lack of basic knowledge about HIV/AIDS transmission, prevention, and symptoms (Lee King & Pate, 2014). Also, Hmong participants in a study indicated that traditional Hmong perinatal care is different than that of the perinatal care in the United States. Hmong women explained that there is more privacy involved in Hmong perinatal care (Lee King & Pate, 2014). The lack of privacy during perinatal care, attention to cultural beliefs, and knowledge are reasons why many Hmong women are reluctant to get HIV tested. As previously mentioned, intrapersonal factors can have a considerable impact on women's decisions to get HIV tested during pregnancy.

Interpersonal Factors

External factors, such as relationships with family, friends, and peers can influence health behavior. These relationships provide social identity, support, and define a person's role in society. Stigma is often a major factor influencing health behavior. Many pregnant women fear that they will receive stigma from family, friends, partners/spouses, and health care providers if they test positive for HIV, which can prevent them from accepting HIV testing (Ben-Natan & Hazanov, 2015). However, family support and support from significant others can be an enabling

factor (Ben-Natan & Hazanov, 2015). If pregnant women feel supported, even if they test positive, they are more likely to accept perinatal HIV screening.

The significant others of pregnant women have substantial influence on perinatal HIV testing, where they can positively or negatively affect test acceptance. Women have expressed that HIV testing during pregnancy can put a strain on their relationships, so they would rather refuse testing to avoid disputes (Rothpletz-Puglia et al., 2012). In addition, some women have felt that having the father of their child in the room puts pressure on them to decline testing, or that some partners coerce the mothers into opting out of HIV testing (Rothpletz-Puglia et al., 2012). The partners of pregnant women or fathers of the child have significant influence on whether or not the woman declines HIV testing. Many women fear the reactions from their partners, so they refuse screening. Discussing perinatal HIV testing without the partner or father should be considered as it may protect the woman's confidentiality and ensure HIV testing.

Another important interpersonal factor that affects perinatal HIV testing can be the patient-provider relationship. Differing values between patients and providers without open communication can reduce trust, and therefore hinder patients from getting HIV tested while pregnant (Lee King & Pate, 2014). If the values of the patient and provider are in line or if the patient and provider openly discuss values, trust and effective communication about HIV, pregnancy, and perinatal testing, in a private and confidential matter, are possible (Lee King & Pate, 2014). A strong and open relationship, built on trust, between the patient and provider can increase the acceptance of perinatal HIV screening. These interpersonal factors can have a both positive and negative affect on perinatal HIV testing.

Organizational, Community, Environmental, and Policy Factors

Perinatal transmission of HIV can be easily prevented if women are tested early enough in pregnancy and receive prevention services. However, HIV testing rates among pregnant women remain suboptimal. Recognizing the factors that influence a women's willingness to be screened for HIV during pregnancy is critical for developing strategies to increase the HIV testing rates. Women's fear of receiving discrimination and stigma from organizations, communities, spouses, family, and health care providers as a result of HIV testing, can impede their willingness to be tested.

Organizational Factors

According to the United States Census Bureau, nearly two-thirds of working women are mothers. Women spend a substantial amount of time in organizations, which indicates that the workplace can influence their willingness to get tested for HIV. Lack of HIV education in the workplace, along with fear of stigma and discrimination, are some of the factors that can impact whether pregnant women get tested for HIV or not. In 1992, the CDC created an initiative that tailored resources and tools to small, medium, and large business to increase education, reduce stigma, and prevent discrimination against employees living with HIV (CDC, 2019a). The free public-private partnership initiative, Business Responds to AIDS (BRTA), seeks to increase awareness and knowledge about HIV among the workforce, strengthen workplace-based screening, prevention and treatment services, while also promoting corporate social responsibility (CDC, 2019a). The CDC explains that workplaces can be one of the most trusted resources for information on HIV and HIV transmission and is a key factor in establishing a positive and productive environment for workers (CDC, 2019b). In addition to sharing information about HIV, workplaces need to create a comfortable environment for HIV-positive workers and their co-workers. A safe and compassionate workplace environment would allow pregnant women to get tested for HIV without fear of stigma and discrimination from co-workers and employers. As employees, pregnant women should be reminded that they have to right to remain in the workforce to their fullest extent possible and a right to disclose their HIV status or not. Additionally, workplaces that host an annual on-site HIV screening event allow employees an accessible and voluntary place to get tested, which can increase testing rates (CDC, 2019b).

Prevention of mother-to-child transmission of HIV requires the efforts of primary care and obstetric and gynecological health care settings. Gaps in services can hinder women from getting HIV tested while pregnant (Mary-Margaret Andrews et al., 2018). Primary care serves as the entry point for medical and health care and often attends to the most patients. Primary care teams have usually worked with the patients for an extended period of time and understand their history and needs. Thus, it is important that a woman’s primary care team continue to be involved throughout pregnancy (Mary-Margaret Andrews et al., 2018). This coordination of care, where the history of the patient is known, can allow the proper prenatal care to be provided, which includes HIV screening. For example, if a patient is high risk for HIV, the primary care team can inform the OBGYN to encourage the patient to get HIV tested and perform the proper

perinatal HIV testing. The involvement of primary care throughout a woman's pregnancy can impact the care she receives.

Incentives for testing have also been implemented as a means to modify infrequent behaviors such as HIV screening. Failure to screen for HIV is the norm across all hospital types, so a study was conducted between 2011 and 2013 to test the influence of small cash incentives on increasing patient HIV test acceptance (Montoy, Dow, & Kaplan, 2018). In the study, incentives were randomly assigned to zones in the emergency department of an urban teaching hospital. Patients in the emergency department, including pregnant women, were offered rapid screening HIV tests and those assigned to a positive monetary incentive were informed that "to encourage testing today we are offering a $1 cash incentive," offering $5 or $10 as relevant (Montoy, Dow, & Kaplan, 2018). 82.3 % of 10.463 patients consented to the inclusion in the study and those offered $1, $5, and $10 accepted 52.6%, 62.1% and 66.6% of tests, respectively (Montoy, Dow, & Kaplan, 2018). The study concluded that the $1 incentive was associated with a 6.2 percentage point increase in HIV test acceptance. Organizations and social institutions, such as a hospital, offering incentives to pregnant women can increase the rate of HIV testing.

Community Factors

Most new HIV infections are due to a lack of well-established interventions, which are considered "missed opportunities". Pregnant women not getting tested for HIV would be a missed opportunity. These missed opportunities are often the result of failures of local and community health systems. Communities and their resources have a strong influence on whether a woman is screened for HIV during pregnancy. As a result, the CDC funds the FIMR/HIV Prevention Methodology National Resource Center to develop a community-based, continuous quality improvement approach (NESHEIM et al., 2012). The FIMR/HIV Prevention Methodology, based upon the Fetal & Infant Mortality review, is an action-oriented community process that assesses, monitors and improves service systems and community resources for women, infants, and families (FIMR/HIV Prevention Methodology National Resource Center, 2009). The methodology includes interviewing mothers to assess the systems factors that contributed to missed opportunities for prevention of mother-to-child transmission. Many FIMR/HIV sites have found issues with HIV testing in communities, such as multiple local hospitals not doing testing of pregnant women in emergency departments (FIMR/HIV Prevention Methodology National Resource Center, 2015) Within the methodology, community

action teams, composed of local leaders, are created to implement suggested system improvements.

Along with communities failing to test, a study found that not having accessible access to care to treat HIV impedes women from getting tested (McDougall, Dalmida, Foster, & Burrage, 2016). However, pregnant women would be more motivated to get HIV tested if their communities provided accessible care to treat the disease. In addition, the fear and stigma associated with HIV testing prevented pregnant women from being screened (McDougall, Dalmida, Foster, & Burrage, 2016). Participants in the study expressed that they did not want to be rejected from their communities or "shunned" from society if they tested positive (McDougall, Dalmida, Foster, & Burrage, 2016). Therefore, the results from the study indicate that tailored community-based interventions that reduce stigma and fear, as well as improve outreach and access of testing and care would increase testing rates.

Environmental Factors

The physical and social environment within neighborhoods may promote HIV related behavior, transmission, and prevention and care, which are linked to HIV testing (Latkin, German, Vlahov, & Galea, 2013). Disadvantaged neighborhoods are linked to an increase in high-risk HIV behavior. Women who partake in risky, unprotected sexual behaviors, like having multiple sex partners or not using a condom, or women using drugs and sharing needles or syringes, would be considered high-risk for HIV (NIH, 2016). Neighborhoods that have high rates of HIV linked to injection drug using and heterosexual transmission have been conceptualized as "toxic" neighborhoods, with conditions including high levels of violence, poor housing, low levels of employment, poor schools, and high levels of drug dealing use (Latkin, German, Vlahov, & Galea, 2013). This environment can also contribute to psychological distress, which is linked to HIV risk behavior. Women living in higher incidence neighborhoods have an increased likelihood of acquiring HIV, as high-risk behaviors are more common. These women living in these low-income areas may be less likely to access prenatal care that could give them the opportunity to be tested for HIV (APA, 2010).

Public Policy

Public policies directed at the identification of HIV-positive pregnant women are essential to prevent mother-to-child transmission of HIV (NESHEIM et al., 2012). The CDC and various studies show that more pregnant women are tested for HIV if the test is included in the

standard group of prenatal tests that women receive routinely (CDC, 2019c). There are two different approaches to HIV testing for pregnant women, the Opt-in and the Opt-out. The Opt-in approach involves pregnant women getting pre-HIV test counseling and they must agree to the HIV test, usually in writing. The Opt-out approach is when pregnant women are told that the HIV test will be included in the standard group of prenatal tests and they have the option to decline the test. This approach allows women to maintain their autonomy, while making HIV testing a routine prenatal test, which increases their likelihood to accept testing (Burr et al., 2007).

State-level policy changes and legislative action to support the Opt-Out approach have produced results (Burr et al., 2007). For example, New York and Connecticut mandate screening of newborns whose mothers' HIV status is unknown, which has had an effect of increasing prenatal HIV testing rates (Burr et al., 2007). In a number of other states, such as Illinois, laws ensure that all pregnant women be offered HIV testing, however many women decline testing when the opt-out approach is not used (Burr et al., 2007). The CDC explains that statistics published in 2002 showed that in Tennessee, which uses an opt-out approach to prenatal HIV testing, the testing rate was 85% (CDC, 2019c). Also, in Birmingham, Alabama, a prenatal clinic using the opt-out testing approach showed that testing increased from 75% to 88% (CDC, 2019c). Legislation can help standardize prenatal HIV testing and ensure that testing is made available to all pregnant women.

Theoretical Framework and Health Behavior Theories

Theoretical Framework provides a perspective or outline through which a health behavior can be examined or assessed. Framework is a representation of how certain factors of a health behavior are related and can explain why these factors are associated with each other. The Behavioral Model of Health Services Use, developed by medical sociologist, Ronald M. Andersen, which is the revised version of the Aday and Andersen behavioral model, is a framework for understanding access to and the utilization of health care services. Andersen's Behavioral Model integrates both individual and contextual determinants of health services use (Babitsch, Gohl, & von Lengerke, 2012).

Health behavior theories are used to explain a behavior and can suggest ways to achieve a certain health behavior change. Theories can evaluate the health problem, explain the behavior behind it, and provide direction for change. In addition, theories can describe the factors that

influence behavior and the reasoning behind the behavior. Theories can provide framework for modifiable factors and guide decisions about health behavior change. Expectancy Value Theories, such as the Health Belief Model, the Theory of Reasoned Action, and the Theory of Planned Behavior, are commonly applied to HIV testing studies.

Behavioral Model of Health Services Use

A retrospective study from 2012, used Andersen's Behavioral Model of Health Services Use framework to examine the perception of HIV risks among women who have never used HIV testing services before. The framework suggests that an individual's use of health services "is a function of predisposing factors (i.e., race, age, gender), enabling factors (i.e., income level, education level, insurance coverage, perception), and need factors (HIV testing services) to determine how a patient accesses and utilizes health care services" (Piper, 2012). The researchers applied the framework to identify predictors and determinants of the utilization health care services, such as attitudes, beliefs, and perception of risks of HIV, among women who have never been tested (Piper, 2012). In the study, 52% of the women responded no to being tested for HIV. The majority of these women were non-Hispanic white, had lower income, were married, and reported having private insurance (Piper, 2012). Some of the most important findings were that 75% of this sample believed that they had not been exposed to HIV, 78.63% reported that they had no chance of every getting HIV, and 96.36% had no plans of being tested for HIV in the next 12 months (Piper, 2012).

The results from this study indicate that attitudes, beliefs, and perception of risk have a significant impact on whether these women would utilize health care services to get tested for HIV. Although this study used Andersen's Behavioral Model of Health Services Use framework to examine the perception of HIV risks among women who have never used HIV testing services before, the framework could be applied to pregnant women as well. Despite recommendations from health professionals, women decline being screened for HIV while pregnant due to the belief that they have a low risk of contracting or having HIV and of perinatal transmission. According to the study, women's perception of risk as it relates to HIV has a direct relationship to their testing behavior (Piper, 2012). The findings of the Piper, et al. study show that it is necessary that recommendations for HIV testing of pregnant women address attitudes, beliefs, and perception of risk. As suggested in the study, consistent and widespread utilization of HIV testing requires national guidance, the promotion of HIV screening as a routine part of medical

care, and associated counseling (Piper, 2012). The framework used in this study has allowed connections to be made between attitudes, beliefs, and perception of risk, and the utilization of health care services to get tested for HIV. Understanding these connections can help interventions ensure HIV testing among pregnant women.

Health Belief Model and the Theory of Reasoned Action

The Health Belief Model (HBM) is one of the most widely accepted health behavior theories and contains several constructs that are used to predict or determine why individuals engage in behavior change. The constructs of the HBM include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, self-efficacy, and modifying variables. The Theory of Reasoned Action (TRA) is another explanatory theory that aims to explain the relationship between attitudes, subjective norms, and behavioral intention. The TRA claims that an individual will change a behavior based on their attitudes toward performing the behavior and the subjective norms associated with the behavior. Subjective norms relate to an individual's beliefs about whether their family, peers, or people of significance in their life, think they should engage in that behavior.

A prospective study from 2018, looked at behavior, health belief, and sociodemographic predictors of HIV test acceptance among a sample of women using the Health Belief Model and the Theory of Reasoned Action (Fan, Fife, Cox, Cox, & Zimet, 2018). Specifically, four health belief scales were developed based on the HBM and TRA, where perceived benefits, perceived barriers, normative beliefs, and perceived worries were measured. An example of a perceived benefit measured is that getting HIV tested would be a great way to protect health. Normative beliefs about HIV screening were measured with eight items, one presenting that most people the participants know would think that HIV testing is a good thing for their health (Fan, Fife, Cox, Cox, & Zimet, 2018). After completing the self-interview, the women were asked it they wanted to be tested with a free oral fluid rapid HIV test, in which 83% of the 2031 participants accepted HIV testing (Fan, Fife, Cox, Cox, & Zimet, 2018). With respect to health beliefs (HBM and TRA), women who accepted the HIV test had higher scores on the perceived benefits, perceived norms, and perceived worry scales, while having lower scores on the perceived barriers scale (Fan, Fife, Cox, Cox, & Zimet, 2018).

Health beliefs relating to the HBM and TRA were significant indicators of acceptance of HIV testing. The results from the study suggest that perceived benefits and perceived barriers to

testing were both strong predictors of test acceptance (Fan, Fife, Cox, Cox, & Zimet, 2018). In addition, degree of worry about being currently infected with HIV predicted whether the women would accept HIV testing. Although pregnant women were not included in this study, the findings can relate to HIV test acceptance among pregnant women as well. For example, in a 2003 study on the factors that influence acceptance of HIV screening by pregnant women, it was shown that the most common reason for test acceptance was that pregnant women felt it was beneficial to them and their baby (Jha, Gee, & Coomarasamy, 2003). In addition, this study found that pregnant women were more likely to refuse testing if they perceived themselves to be low- risk (Jha, Gee, & Coomarasamy, 2003). Both these studies suggest that perceptions, beliefs, and attitudes towards HIV screening strongly affect whether or not a pregnant woman will accept testing. Therefore, recommendations of HIV testing to pregnant women should address the possible attitudes, benefits and risks associated with HIV to encourage testing.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) started as the Theory of Reasoned Action, but also accounts for external factors that can prevent an individual from engaging in a behavior. The TPB has the same constructs as the TRA (intention, attitudes, and norms), but includes perceived behavioral control. Under the TPB, an individual's perception of how much control they have to participate in a behavior is combined with intention, attitude, and norms to determine or predict behavior.

A cohort study in Addis Ababa from 2011, applied the Theory of Planned Behavior to explain intended and actual HIV testing of pregnant women. 3033 women completed TPB interviews that included attitudes, subjective norms, perceived behavioral control, and intention with respect to HIV testing, however, only 2928 of the women ended up being HIV screened at follow up (Mirkuzie, Sisay, Moland, & Astrøm, 2011). According to the study, perceived behavioral control, attitudes, and subjective norms are important in changing the intention to get HIV tested. The study revealed that the actual decision to get tested for HIV, however, was primarily influenced by subjective norms and attitudes (Mirkuzie, Sisay, Moland, & Astrøm, 2011). This means that pregnant women are more likely to accept HIV testing if they perceive a positive normative pressure. Although the United States differs from Ethiopia in terms of health care and economy, among other things, the findings can be applied. For instance, the findings correlate to another study from 2000, where acceptance rate of HIV testing during pregnancy

related to social support as well (Fernández et al., 2000). Both these studies indicate that facilitating the decisions of pregnant women to get HIV tested should include cognitive determinants and social approval. In order for behavior change to occur, these factors must be considered.

Suggestions for Intervention

While the United States has seen incredible clinical advances with regards to HIV, it still remains unable to eliminate mother-to-child transmission of HIV. A systematic review from 2020, identified barriers to and facilitators of routine perinatal HIV testing, and recommended interventions to increase testing (Bagchi & Davis, 2020). According to the review, interpersonal factors were the most numerous of barriers. Many of these barriers revealed a need for education of patients and training of providers in HIV screening. Targeting education for intervention has potential benefits, such as reducing HIV-related stigma and encouraging pregnant women to accept HIV screening (Bagchi & Davis, 2020). Providing resources in examination rooms can also foster discussions about HIV testing in a private and confidential space (Bagchi & Davis, 2020). In addition, training providers to emphasize the health benefits of knowing one's HIV status to patients, such as eliminating perinatal transmission and the use of ART, can encourage screening (Bagchi & Davis, 2020). Along with proper communication training, incentivizing providers to offer HIV testing to pregnant women, even to those who are considered low risk, can increase HIV screening rates (Bagchi & Davis, 2020). Incentives could include enhanced reimbursement for HIV screening. Pregnant women who perceive they are low risk for HIV are less likely to accept testing, however encouragement from providers could increase acceptance. By incentivizing providers to promote HIV screening among pregnant women, more women will be offered testing, so more women will be able to accept.

Racial and cultural factors, in regard to the patient-provider relationship, should also be addressed for intervention. The 2020 systemic review addresses the importance of cultural competence of providers. African American, Hispanic, and Asian American women are disproportionately affected by HIV and are less likely to receive perinatal HIV testing (CDC, 2018). A reason for this can be the disconnect between the values of the patient and of the provider. This results in a lack of effective communication and trust. The review suggests that required training in cultural diversity and engagement of minority communities can help increase HIV screening rates of pregnant women (Bagchi & Davis, 2020). Therefore, race and the patient-

provider relationship are important components of intervention. Lastly, the review mentioned that coordination of care is an important factor to address with intervention (Bagchi & Davis, 2020). Gaps in service between primary care and OBGYN health services can result in a deficiency of proper care, which includes HIV testing. A suggestion to close the gaps is electronic medical records with reminders and standing orders of perinatal HIV testing (Bagchi & Davis, 2020). This allows coordination of care to be maintained throughout different health care services.

Socioeconomic factors should also be addressed in regard to intervention of perinatal HIV screening. In Chicago, IL, the Mother and Child Alliance organization has created programs in hopes of ending mother-to-child transmission of HIV. Their 24/7 Illinois HIV Hotline is an important resource for perinatal care and women living with HIV (MACA, 2020b). The hotline provides instantaneous medical and social service consultation and connects pregnant women to care during their pregnancy. Woman are linked to HIV testing and specialty care, perinatal case managers, and counseling (MACA, 2020b). The program is funded by the Illinois Department of Public Health and is available statewide 24 hours a day, 7 days a week (MACA, 2020b). This allows pregnant of low socioeconomic class to have access to resources with perinatal HIV screening. Pregnant women who do not receive prenatal care due to lack of access and means are not likely receive HIV testing. In addition, fears of testing positive and not being able to afford treatment hinder pregnant women from getting screened. The 24/7 Hotline addresses fears by providing counseling and support and suggests resources for pregnant women to get access to HIV screening.

Furthermore, expansion of policies should be targeted for intervention. The CDC recommended Opt-Out Approach has been shown to increase perinatal testing rates, however many providers and health care services do not use this approach (CDC, 2019c). Policies should be created to require the Opt-Out Approach in all health care facilities that that offer HIV testing. This will allow perinatal HIV testing to be performed as a part of a standard group of tests. In Illinois, MACA helped to pass an import HIV law that ensures counseling and perinatal HIV screening through and Opt-Out Approach (MACA, 2020a). The Perinatal HIV Prevention Act requires that all pregnant women in Illinois be counseled and offered an HIV test by their providers as early as possibly in the pregnancy, with the option to decline (MACA, 2020a). This policy has the effect of increasing perinatal HIV testing.

The interventions and suggested interventions above address several important factors that impact perinatal HIV testing. However, these interventions fail to address the influence of the partner of the pregnant woman. The significant other can negatively affect whether a pregnant woman accepts HIV testing. In order to facilitate testing, physicians could offer private counseling to the pregnant women where HIV testing can be discussed. This will help the pregnant woman make the decision herself without partner influence. In addition, to increase HIV screening among pregnant women, providers should offer HIV testing again in following prenatal visits, if the woman has declined testing originally. This can emphasize to the patient how important perinatal HIV testing is and the risk of mother-to-child transmission of HIV. New interventions should express the benefits of perinatal HIV testing throughout the woman's pregnancy to ensure screening. By understanding and connecting the barriers and enablers to HIV testing of pregnant women, providers and policy makers can create interventions that can effectively increase testing rates.

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