

MATERNAL MORTALITY IN THE UNITED STATES:  
COMMON CAUSES, RACIAL DISPARITIES, AND BEST PRACTICE  
RECOMMENDATIONS

By

RAYA MAREN COX

---

A Thesis Submitted to the W. A. Franke Honors College

In Partial Fulfillment of the Bachelors degree

With Honors in

Nursing

THE UNIVERSITY OF ARIZONA

M A Y 2 0 2 3

Approved by:

---

Dr. Melissa Goldsmith  
College of Nursing

## **Abstract**

The purpose of this thesis is to explore the issue of maternal mortality in the United States. Although the worldwide maternal mortality rate has been steadily decreasing over the past several decades, the US rate continues to increase (Centers for Disease Control and Prevention [CDC], 2022; World Health Organization [WHO], 2019). This is quite concerning, especially as many of these maternal deaths are preventable if recognized early and treated appropriately. Additionally, women of color make up a disproportionate number of maternal deaths in the US, an outcome that demonstrates the inequities of care in the maternal healthcare field.

Therefore, this thesis focuses on preventing the most common causes of maternal deaths including postpartum hemorrhage, hypertensive and cardiovascular disorders, and infection and sepsis with an emphasis on racial disparities that lead to poor outcomes for women of color. A review of the current literature is presented, and best practice recommendations are compiled from this evidence, including increased access to care and anti-bias training for healthcare professionals. Lastly, a plan for the implementation of the anti-bias training is presented using the Plan-Do-Study-Act method of implementing and evaluating change within healthcare settings (Institute for Healthcare Improvement, 2020).

## **CHAPTER ONE**

### **Introduction**

This thesis will explore the maternal mortality rate in the United States as well as the contributing factors that impact this rate. Background information on this issue will be provided and the importance of this topic to nursing practice will be explored. Current literature will be reviewed and synthesized to create best practice recommendations based on the evidence presented in the literature. Additionally, this thesis will present a model of how to disseminate the information that is found. This will allow for efficient and effective sharing, implementation, and evaluation of the presented recommendations, thus leading to an increased knowledge of factors contributing to maternal mortality in the US as well as mitigation strategies for both healthcare professionals and for the patients themselves.

### **Background**

#### **Definitions**

The maternal mortality rate is defined as the number of maternal deaths per 100,000 live births (Centers for Disease Control and Prevention [CDC], 2022). Maternal deaths are defined as any death occurring during pregnancy or within forty-two days of the end of a pregnancy, regardless of how the pregnancy ends. Deaths occurring secondary to an unforeseen accident, such as a car crash, are not included as maternal deaths and do not count as part of the maternal mortality rate. However, any death caused by a condition that began during or was exacerbated by the pregnancy does contribute to the maternal mortality rate (CDC, 2022).

Maternal mortality rates are looked at worldwide as well as by country and can be broken down by further characteristics as well. For example, the maternal mortality rate in the US is often examined and reported by age or by race and ethnicity as there is a higher prevalence of

maternal deaths in some age groups and races than in others. This can be helpful to explore because the maternal mortality rate is influenced by social determinants of health and health disparities (CDC, 2022). Social determinants of health are defined by Healthy People 2030 as uncontrollable environmental conditions that contribute to determining an individual's health outcomes and quality of life (2022). Health disparities are influenced by multiple factors that cause certain people or groups to experience an unequal outcome as compared to a more privileged individual in the same situation or with the same medical condition (CDC, 2020).

### **Statistics**

Overall, the worldwide maternal mortality rate was 223 per 100,000 live births in 2020 (World Health Organization [WHO], 2023). This rate has been decreasing throughout the past two decades, falling 38% between 2000 and 2017 (WHO, 2019). Currently, the vast majority (94%) of these maternal deaths occur in middle to low-income countries (WHO, 2019).

However, the United States has seen an increase in the maternal mortality rate in the last several years. In 2019, the US maternal mortality rate was 20.1 per 100,000 live births. By 2020, however, it had grown to 23.8 of 100,000 live births. Additionally, the maternal mortality rate of Black women was almost three times higher than that of White women in 2020 and women over the age of forty were nearly eight times more likely to die from a complication of pregnancy or birth than women under the age of twenty-five (CDC, 2022).

### **Causes of Maternal Deaths**

Although there are many causes of maternal deaths, the most common in the US are postpartum hemorrhage (12.1%), hypertensive disorders or other cardiovascular disorders (43.4%), or infection (14.3%) (CDC, 2023; McKinney et al., 2018). Postpartum hemorrhage (PPH) is severe bleeding after giving birth with a cumulative blood loss of greater or equal to

1000mL within twenty-four hours after either a vaginal or Cesarean delivery. In addition, late PPH can occur. In these cases, the patient hemorrhages after the first 24 hours post-delivery, which can be quite problematic as many postpartum women are no longer in the hospital at this time. Uterine atony – the uterus not contracting and becoming firm after delivery – is a leading cause of PPH. A uterus that does not contract allows bleeding to continue as the muscles are unable to clamp down on the vessels to stop the hemorrhaging (McKinney et al., 2018).

There are various hypertensive disorders that can occur or intensify during pregnancy and in the postpartum period (McKinney et al., 2018). Chronic hypertension is high blood pressure that either was present before the onset of the pregnancy or that does not resolve after delivery, whereas gestational hypertension generally resolves spontaneously within six weeks of the end of the pregnancy. Preeclampsia is a serious hypertensive condition that can progress to eclamptic seizures and prove fatal. Preeclampsia is characterized by systemic vasospasms that raise the pregnant woman's blood pressure to a dangerous level, causing widespread damage throughout the mother's body as well as potential fetal compromise or death. Additionally, preeclampsia and the resultant eclamptic seizures can occur after delivery and can cause maternal deaths in the postpartum period as well (McKinney et al., 2018).

Additionally, any preexisting cardiac condition throughout pregnancy and delivery increases a woman's risk of death (McKinney et al., 2018). These conditions include both congenital defects, such as atrial or ventricular septal defects and mitral valve prolapse, as well as acquired pathologies such as rheumatic heart disease and coronary artery disease. In every pregnant woman, the cardiovascular system goes through profound changes to accommodate the pregnancy. Blood volume and cardiac output both increase significantly, which puts extra strain on the woman's heart. Most healthy patients are able to tolerate these changes and their hearts

are strong enough to accommodate the additional workload. However, for patients with a preexisting heart condition or defect, the extra demands can cause them to go into heart failure, which can be fatal (McKinney et al., 2018).

Maternal deaths from postpartum infections have decreased greatly since the beginning of antibiotic therapy, however, they remain a leading cause of maternal deaths (McKinney et al., 2018). A major contributor to postpartum infections is the changes that naturally occur during labor and delivery. One such change is the reduced acidity of the vagina. Because of the more basic nature of the amniotic fluid and blood, this environment becomes more hospitable to bacteria. Once inside the body, the bacteria can spread throughout the entirety of the woman's reproductive tract, causing irreparable damage. Once the infection reaches the bloodstream, the patient can become septic and die. Additionally, the risk of infection is higher following a C-section or an instrument-assisted vaginal birth due to the introduction of foreign objects into the body (McKinney et al., 2018).

### **Current Clinical Guidelines**

As the high rate of maternal deaths in the US is an established issue, there are existing clinical practice guidelines that work to address the root causes of these maternal deaths. For example, the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) has published practice briefs and guidelines on this topic (2021). One such practice brief, "Quantification of Blood Loss," provides guidelines on how and when to objectively quantify the amount of blood lost during a delivery (2021b). AWHONN recommends that blood loss be quantified – by weighing pads – for every birth instead of just estimated. This early and accurate quantification is effective in promoting early detection of PPH and is therefore an invaluable tool

for decreasing deaths due to these hemorrhages (Association of Women's Health, Obstetric and Neonatal Nurses [AWHONN], 2021b).

Another AWHONN practice brief, "Guidelines for active management of the third stage of labor using oxytocin," also addresses the issue of PPH as a leading cause of maternal deaths (2021a). As uterine atony is the leading cause of PPH, this guideline recommends standardized administration of the uterotonic oxytocin during the third stage of labor (delivery of the placenta). Specifically, AWHONN recommends the administration of a bolus of IV oxytocin followed by a continuous infusion for a minimum of four hours post-delivery. However, the exact dosing, timing, and duration of this medication for optimal PPH prevention and treatment is still being researched and it is AWHONN's position that each facility should develop their own protocols for the specifics of oxytocin administration. In addition to oxytocin, uterine massage and umbilical cord traction are suggested to actively manage this stage of labor in an effort to prevent uterine atony and subsequent hemorrhage (AWHONN, 2021a).

AWHONN also provides education for both new mothers and healthcare workers to address serious post-birth complications (AWHONN, 2023). The warning signs discussed include chest pain, difficulty breathing, seizures, thoughts of hurting self or others, excessive bleeding, passing large blood clots, poor wound healing, signs of deep vein thrombosis (DVT), fever, headache, and vision changes. These symptoms are included as they may indicate the presence of a pulmonary embolism, eclampsia, postpartum depression, PPH, infection, DVT, and hypertension (AWHONN, 2023). Additionally, the American College of Obstetricians and Gynecologists (ACOG) provides patient information on several common causes of maternal deaths, including heart disease, preeclampsia and hypertension, and bleeding throughout pregnancy and delivery (ACOG, 2021). By providing this information, both AWHONN and

ACOG are promoting early recognition of potentially fatal complications of pregnancy and delivery, thus empowering patients to be knowledgeable about causes of maternal illness and death and to be proactive in their post-delivery recovery and care.

Additionally, Howell et al. (2018) provide expert opinion on sources of racial and ethnic disparities in maternal healthcare as well as strategies with which to minimize these disparities (2018). Their recommendations include education and training for nurses and healthcare providers on implicit bias and culturally competent care as well as ways to increase access to care and to improve communication and decrease language barriers. Lastly, they discuss the importance of tracking the incidences of unequal and biased care, as the problem must be recognized in order to be addressed (Howell et al., 2018).

AWHONN has also published information on birth equity and respectful maternity care (2022). This evidence-based clinical guideline discusses the disrespect, mistreatment, and even violence and abuse that are all too often experienced by women of color in maternity care settings. It then presents information regarding respectful patient-staff interactions, the rights of the patient in maternity care settings, and factors that help facilitate the provision of respectful care for all patients. This guideline calls for staff to become self-aware about their own biases, to accept that their patients may have different priorities and perspectives from their own, and to develop mutual respect and shared decision making between themselves as the healthcare workers and their patients. These interventions all serve to protect the autonomy and dignity of each patient by calling for accountability amongst healthcare workers in maternity care settings for providing respectful and high-quality care (AWHONN, 2022).



### **Issue Importance and Significance to Nursing**

Many of the maternal deaths that take place, both in the US and worldwide, are preventable (WHO, 2019). Therefore, this is an issue of utmost importance that must be closely examined by the healthcare community in order to decrease the number of preventable maternal deaths and thereby lower the maternal mortality rate. Additionally, because the issue of maternal deaths in the US disproportionately impacts women of color who have historically been subjected to unequal and sub-par healthcare, it is critical that these inequities be addressed and corrected through education and non-biased treatment of all patients.

Nurses are responsible for direct patient care, especially for patients in the hospital setting. Therefore, nurses must be educated on early signs of complications that may lead to maternal deaths to promote early recognition and treatment of any such symptoms, thus reducing preventable deaths. As the most common causes of maternal deaths are postpartum hemorrhages, infections, and cardiac and hypertensive disorders, it is especially critical that nurses are trained to recognize the earliest signs of these conditions in their patients. If nurses are carefully assessing and documenting their patient's status throughout the pregnancy – at prenatal visits, during delivery, and in the postpartum period – and using evidence-based guidelines in their patient care, cardiac conditions and infections can be caught and treated as soon as possible and hemorrhages have the potential to be controlled. Additionally, if the nurses are taught to recognize early warning signs, they can educate their patients on what to be aware of as well. With this education, the patients themselves will be able to notice subtle changes in their bodies that could indicate an impending emergency and know to seek medical attention at once (WHO, 2019).

Another important aspect of nursing is advocating for the patients and making sure that their concerns are addressed, especially when they are unable to speak for themselves. Through this role, nurses can stand up for patients to ensure that they are getting the care that they need. This, too, can save lives. Nurses can advocate for patients whose symptoms may be overlooked or not deemed serious by another member of the healthcare team and can, therefore, help to create an environment where every patient is treated fairly and without bias or discrimination (AWHONN, 2021c).

### **Summary**

The maternal mortality rate in the United States is very concerning, especially in relation to the current worldwide trends (CDC, 2022). While other countries have seen significantly fewer maternal deaths over the past twenty years, the incidences of maternal deaths in the US have grown over the past five years. Additionally, women of color make up a disproportionately large number of these maternal deaths, due in part to biased treatment from the healthcare system and those working within it (CDC, 2022).

The most common causes of maternal deaths in the US are postpartum hemorrhages, hypertensive and other cardiac disorders, and infections leading to sepsis (McKinney et al., 2018). Although each individual and case is different, many of these deaths could be prevented if caught and treated early (WHO, 2019). Therefore, it is essential that nurses receive thorough education in order to recognize and resolve these preventable deaths as well as be able to educate their patients throughout the pregnancy on concerning signs and symptoms that warrant immediate medical help. Nurses play a critical role in resolving this issue of maternal deaths as they are in the unique position of caring for the patients directly and continuously at their bedsides (AWHONN, 2021).

## CHAPTER TWO

### Search Parameters

To conduct the literature review portion of this thesis, the PubMed database was searched. The search terms used were “maternal mortality,” “maternal mortality United States,” “maternal mortality prevention,” and “implicit bias training maternal health.” Any articles not published within the last five years were excluded. The CDC and WHO were also searched using “maternal mortality” and “maternal mortality rates.” Additionally, “maternal mortality” was searched for on the American College of Obstetricians and Gynecologists (ACOG) and the Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN) websites. Some sources were also found through the references of other articles. Two PICO(TS) questions guided the search for articles for this literature review. The first was, “In the United States (S), why are maternal deaths from pregnancy and/or delivery complications (P) so prevalent as compared to other countries with lesser or equal available resources (C) and what can be done (I) to decrease the number of maternal deaths (O)?” The second PICO(TS) question was, “In the United States (S), why do women of color (P) make up such a disproportionate number of maternal deaths as compared to White women (C) and what can be done (I) to resolve this inequality (O)?”

The types of articles included in this literature review are systematic reviews, narrative reviews, randomized controlled trials, a pilot study, a retrospective cohort study, an ecological study, and a conceptual framework. The level of evidence of these articles ranges from Level I to Level VII. Overall, eleven articles are included in this literature review. These articles address maternal mortality, postpartum visit attendance, social determinants of health and racism in maternal healthcare, implicit bias, experiences and inequities faced by women of color in

maternity care settings, and interventions and initiatives to decrease maternal mortality and racial disparities.

## **Literature Review**

### **Maternal Mortality Overview**

In their systematic review, Wong and Kitsantas (2020) discuss the rising maternal mortality rate in the United States as well as the quality of available perinatal healthcare and how this care may contribute to maternal deaths. The authors searched PubMed, Web of Science, the CDC, and WHO as well as similar public health databases to obtain their studies. Search terms included “quality in healthcare,” “maternal mortality,” “maternal health,” and “obstetrics” (Wong & Kitsantas, 2020). To be included in this review, the studies had to have been published in the last ten years and written in English as well as aim to address quality of maternal healthcare, maternal health outcomes, or maternal mortality, yielding a total of 25 studies that were included in this review. These final 25 articles included reviews, case studies, surveys, statistical studies, commentaries, reports, opinion, mixed methods studies, and exploratory studies (Wong & Kitsantas, 2020).

Multiple articles compared maternal outcomes, including mortality, before and after the implementation of an established clinical guideline or protocol (Wong & Kitsantas, 2020). One examined the effectiveness of the Maternal Safety Consensus Bundle for Obstetric Hemorrhage while others investigated the Maternity Care Improvement Preeclampsia Toolkit and Management of the Third Stage of Labor. Each of these studies found that, when implemented appropriately, these existing protocols are very effective in improving maternal health outcomes as well as decreasing the incidence of maternal deaths from the addressed complications. Additionally, noting the inconsistencies in postpartum discharge education across patients and

settings, one study designed and implemented a standardized discharge education checklist. After the implementation of this checklist, the researchers found that the patients who received education from nurses using the checklist were more prepared and able to seek appropriate care when complications arose in the postpartum period after their initial discharge (Wong & Kitsantas, 2020).

Other themes identified in this review are the importance of communication and multiprofessional care teams, the need for improved access to high-quality maternal during the perinatal period, and the role of implicit bias and harmful stereotyping on maternal mortality and the racial disparities seen in maternal healthcare settings (Wong & Kitsantas, 2020). One study noted the lack of coordination and continuity of care across the perinatal period. Prenatal care is generally provided by outpatient obstetric (OB) clinics that are separate from the patient's primary care provider. Additionally, intrapartum care is often provided in yet another setting: the hospital. Therefore, the patient's care is fragmented between multiple settings and providers, especially for those with any preexisting or chronic conditions (Wong & Kitsantas, 2020).

This complicates the patient's ability to seek care from the appropriate provider in the event of a complication as well as decreases their access to holistic and patient-centered care (Wong & Kitsantas, 2020). The providers have the potential to lose the ability to see the bigger picture of the patient as a whole person and not just a single condition in these circumstances. Therefore, in the current system where care is often provided in multiple settings, poor communication and fragmented care may lead to errors and decreased overall quality of care. This demonstrates the need for clear and effective communication among the members of the healthcare team in all situations, but especially when continuity of care is not the standard or realistic practice (Wong & Kitsantas, 2020).

Regarding access to care, the included studies identified several barriers that impact a patient's ability to receive quality care, both in the prenatal, intrapartum, and postpartum periods (Wong & Kitsantas, 2020). Communication is one such common barrier to appropriate care. As previously discussed, communication between members of the healthcare team is critical for improving patient outcomes. However, effective communication is needed between the healthcare workers and the patient as well to ensure that the patient is empowered to fully participate in their care and that their concerns are being heard and addressed. One study found that many women who identify as immigrants face a barrier to maternal healthcare in the form of a lack of available interpreters. Without high-quality interpreters, appropriate communication is not possible, as any effective communication must occur in a language that is comfortable and can be understood by all parties and therefore interpretation is often required. Additionally, another study found that many women were not receiving adequate prenatal or postpartum care. When investigating, the researchers determined that this was most commonly due to long wait times for making appointments as well as long wait times to see the provider at the appointments. These factors impacted low-income women most notably, demonstrating the connection between access to care and healthcare disparities (Wong & Kitsantas, 2020).

This review found evidence suggesting vast racial and ethnic disparities in maternal healthcare and mortality in multiple studies (Wong & Kitsantas, 2020). One study found that Black women are more than three times more likely to die from pregnancy or postpartum complications than White women. Additionally, these disproportionately poor outcomes can be attributed to the disparities that women of color experience in the healthcare system. For example, studies found that these women were often provided with poor care throughout the

entire perinatal period, thus increasing their chances of complications resulting in the disproportionate number of maternal deaths in these populations (Wong & Kitsantas, 2020).

A strength of this study is its design as a systematic review (Wong & Kitsantas, 2020). The methods and inclusion and exclusion criteria for the article search is clearly presented in the narrative. Additionally, the results of this review are consistent with similar studies, pointing to the accuracy of information provided by this review. The articles included in this review were all conducted either in the United States or in European countries with similar healthcare systems. This can be seen as both a strength and a weakness. It is a strength because this review focused on the maternal mortality rate and quality of care in the US and therefore the results are applicable to the chosen setting. However, this is also a weakness as it excludes articles conducted elsewhere in the world that may still be applicable to the United States (Wong & Kitsantas, 2020).

In their systematic review, Attanasio et al. (2022) explore attendance at postpartum follow-up visits for women in the United States, an important issue as approximately 50% of maternal deaths occur in the postpartum period. Based on previous literature, the percent of women who attend their postpartum follow-ups varies widely. Additionally, research shows that these rates often vary based on insurance status, socioeconomic status, and demographic characteristics. Therefore, the researchers sought to reexamine this literature and compile more up to date and accurate results (Attanasio et al., 2022).

To conduct this review, the PubMed, CINAHL, PsycInfo, and Web of Science databases were searched for studies about postpartum visit attendance (Attanasio et al., 2022). Only those published in English and within the last 25 years were considered for review. Two researchers reviewed each article independently and extracted data using a standardized tool to decrease the

chance of bias in the article selection process. In total, 88 studies were included in this review and data from the included studies was collected from patient surveys, insurance claims, electronic health records, and patient chart reviews. Intervention based and qualitative studies were excluded from this review (Attanasio et al., 2022).

The researchers found that the overall percentage of women attending their follow-ups as recommended ranged from almost 25% to 95% (Attanasio et al., 2022). The mean attendance was 72.1% and the median was 74.2%. Additionally, 35% of the articles exploring differences based on race and ethnicity did not find any difference between White women and any other group. However, another 35% of these studies did find that women of color were less likely to attend their appointments than White women. Of the studies addressing insurance status, 82% found that women with Medicaid were less likely to attend postpartum visits than those with other insurances, especially private insurance. Lastly, 40% percent of the studies examining chronic conditions found that these patients were less likely to make their appointments than those without preexisting conditions. Overall, the majority of this data aligns with that from previous studies and reviews demonstrating that socially marginalized women and those without private insurance are less likely to attend their follow-up visits. The researchers note that this is likely due to these social determinants of health causing disparities in this population's access to healthcare services (Attanasio et al., 2022).

The design of this review is a strength (Attanasio et al., 2022). Another strength is that multiple researchers independently reviewed and extracted data for each potential article, reducing the risk of bias in this process. A limitation of this review is that the time period in which articles were accepted was very large. As some of the results were gathered from articles published 25 years ago, they may not be representative of current trends. Additionally, this



review relied on estimated and observational data from each study. Therefore, the actual data regarding postpartum visit attendance may vary from what was reported in this review (Attanasio et al., 2022).

### **Racism, Social Determinants of Health, and Maternal Mortality**

In their review, Prather et al. (2018) explore the influences of racism on reproductive health – including maternal mortality – of Black women in the United States. Although legalized slavery, the most blatant manifestation of racism against African Americans in the US, has ended, this history has undeniably shaped the country and is still informing the attitudes towards, actions of, and treatment of Black people. Racism still exists today and has many, far-reaching implications, including influencing those working within the healthcare system as well as those seeking care from this system. Therefore, the authors sought to determine what implications history – from slavery to current events – has on the sexual and reproductive health of Black women and how their health outcomes can be improved. Specifically, the authors focus on four distinct eras: slavery, Jim Crow/Black codes, civil rights, and post-civil rights or current day (Prather et al., 2018).

Databases such as PubMed were searched for any materials relating to this topic of racism, history, and their influences on the current day reproductive health of Black women in the United States (Prather et al., 2018). Only peer-reviewed sources and those published in English were included for this review. Through their review, the authors compiled experiences during each time period that contribute to the reproductive and sexual health practices of Black women today (Prather et al., 2018).

During all of these time periods, the authors identified that African American women experienced a great deal of sexual and reproductive violence (Prather et al., 2018). While

enslaved, an estimated 58% of Black women were raped by their White male owners. Black women were also subjected to experimental medical and surgical procedures without their consent and without the use of anesthesia for the sole purpose of allowing the White providers to practice their surgical techniques. They were forcibly sterilized without either their knowledge or their consent in an effort to control the size of the Black population by stopping the ability of Black women to reproduce. Additionally, the stereotype of Black women being hypersexual emerged and was amplified by the media's portrayal of this population. Black women were subjected to genital mutilation, public gang rapes, lynching, and were sold as breeders so as to deliver more children into slavery and thus perpetuate the system and the benefits it provided for the White owners (Prather et al., 2018).

Throughout each era, Black women had unequal and insufficient access to healthcare and were forced to live in poverty (Prather et al., 2018). Although the Tuskegee Syphilis Trial was conducted on Black men, it had a direct effect on Black women as well. They watched their husbands, brothers, fathers, friends being experimented on and mistreated by the medical system that they are supposed to be able to trust. Black women themselves continued to be mistreated by the healthcare system and faced life-threatening and even fatal complications from experimental and unnecessary procedures that they were forced into. Inequities related to available and recommended birth control options began and still persist today (Prather et al., 2018).

This history of mistreatment and exploitation, both at the hands of individuals as well as institutions, has led to the current status of reproductive health amongst Black women (Prather et al., 2018). Besides having disproportionately high rates of maternal mortality and pregnancy-related complications, Black women also have higher incidences of many sexually transmitted

infections (STIs) including HIV, gonorrhea, syphilis, and chlamydia than their White counterparts. Many of these STIs can lead to serious complications and even to infertility if the patient does not have access to quality care and therefore is not treated appropriately (Prather et al., 2018).

Additionally, Black women are still more likely than White women to have a hysterectomy for a condition that could potentially be managed without taking the radical and irreversible step of removing their uterus (Prather et al., 2018). As evidenced by this increased rate of hysterectomies, it is clear that the idea of sterilizing and controlling the growth of the Black population in the US has been engrained deeply into White society. Overall, the authors concluded that racism itself, and the inexcusable history of violence and exploitation experienced by Black women, continues to shape the way that they are treated today, by individuals and by the healthcare system. This history has caused racism to become embedded into society and is still marginalizing Black women today. To combat these negative outcomes and the mistreatment of this population, the authors suggest four interventions: more research on historical implications and potential preventative measures, education for healthcare workers on culturally appropriate care of this population, expanding access to quality sexual and reproductive healthcare to all women, and governmental policies to promote health equity for Black women (Prather et al., 2018).

A strength of this review is its thorough analysis of factors contributing to current sexual and reproductive health outcomes for Black women in each of the four identified eras (Prather et al., 2018). A limitation, however, is its design. The methods of conducting the search for articles and analyzing these sources is not clearly laid out in the narrative. Additionally, although the researchers analyzed the outcomes of Black women as a whole population, it is

important to remember that these results are not necessarily representative of the entire population of Black women in the US as, like in all populations, every individual's experience is unique and valid (Prather et al., 2018).

In their ecological study, Armstrong-Mensah et al. (2021) searched for answers to explain why the state of Georgia has one of the highest rates of maternal mortality in the entire United States, second only to Louisiana. To explore this issue, the authors studied the relationship between various social determinants of health and Georgia's high maternal mortality rate. They reviewed applicable studies published from 2005 to 2021 that were found through PubMed and Google Scholar. Through reviewing these 80 studies, 36 were included in their research and helped them to identify five specific determinants that contribute to Georgia's maternal mortality rate: discrimination, racism, socioeconomic status (SES), healthcare access, and geographic location relative to obstetric services (Armstrong-Mensah et al., 2021).

Regarding geographic location and access to high quality obstetric healthcare, over 30 hospitals closed their labor and delivery units over the past few decades (Armstrong-Mensah et al., 2021). Additionally, most of the hospitals in Georgia's rural areas either do not have a labor and delivery unit, do not have any obstetricians (OBs) or gynecologists (GYNs) employed, or both. Therefore, women in rural Georgia are required to travel long distances across the state in order to seek care for their obstetric needs. This is problematic because many of these women do not have access to transportation or cannot afford to take the time needed to travel such distances. The authors also found that this increased travel time often resulted in the woman being induced for convenience or needing a C-section. This directly contributes to maternal mortality in that both inductions and C-sections are more likely to lead to complications that can be fatal than a natural vaginal birth (Armstrong-Mensah et al., 2021).

It was found that the lack of health insurance of many women with low SES contributed greatly to their pregnancy-related health outcomes and complications (Armstrong-Mensah et al., 2021). Even after the Affordable Care Act allowed states to expand their Medicaid coverage of those without health insurance, Georgia has not elected to do this. Because of this decision, hundreds of thousands of Georgia's citizens, especially those with low SES, continue to live without health insurance. Therefore, many uninsured pregnant women struggle to access medical care that could potentially identify risk factors for intrapartum or postpartum complications that contribute to the high number of maternal deaths across the state and the country as a whole (Armstrong-Mensah et al., 2021).

Because of the systemic racism that is still at the foundation of so many US institutions, including the healthcare system, many Black pregnant women are dismissed by their healthcare providers and their medical needs are not taken seriously (Armstrong-Mensah et al., 2021). The authors found that this issue of racism and discrimination within the healthcare system causes many of Georgia's Black pregnant women to receive low-quality, sub-standard care that is not equal to the care that a White pregnant woman receives in the same situation. Because so many Black women are silenced by the system, their potentially fatal conditions often go unnoticed or misdiagnosed until it is too late. Therefore, there is a direct relationship between racism and discrimination and maternal deaths, and this also accounts for why Georgia's Black population contributes so highly to their maternal mortality rate (Armstrong-Mensah et al., 2021).

The authors also identified key strategies to help decrease the overall maternal mortality rate in Georgia as well as the disproportionate number of Black women who make up these statistics (Armstrong-Mensah et al., 2021). These strategies include expanding Medicaid coverage, improving access to quality care in all areas of Georgia, increasing the number of

healthcare workers with high-quality training in obstetric care, and reducing healthcare disparities across races. Specifically, the authors call for “mandatory cultural competency training with a focus on equity and reproductive justice” for all healthcare workers in order to decrease the biased and discriminatory treatment faced by so many pregnant Black women across Georgia (Armstrong-Mensah et al., 2021).

A strength of this study is the how the authors used multiple other study findings to inform their own results and to identify their key factors contributing to the maternal mortality rate in Georgia (Armstrong-Mensah et al., 2021). They searched through quality databases and reported the search terms used. However, they did not include a lot of other information, such as the inclusion and exclusion criteria or the types of studies that were considered. Therefore, the way that the search was conducted in this article can be seen as both a strength and a limitation. The researchers also noted that they reviewed 80 studies but only included 36 in their interpretation and report. This is not a very large sample of other studies and, therefore, the results may not be very generalizable. Additionally, this study only considered the maternal mortality rate and social determinants of health in Georgia and so, although focusing on one state is a good start, their findings may not necessarily apply to the United States as a whole (Armstrong-Mensah et al., 2021).

### **Implicit Bias**

In their article, Saluja and Bryant (2021) discuss implicit bias and how it contributes to maternal morbidity and mortality, especially in Black and Brown women. Implicit biases, automatic thoughts or assumptions that one forms, often play a role in the interactions and communication between patients and their healthcare providers. Because of the nature of implicit bias, it is difficult to quantitatively measure or identify one’s biases. However, the

authors note that there are tools available online to help individuals identify their biases. If one is not aware of their biases, they cannot hope to combat them with positive and conscious relearning (Saluja & Bryant, 2021).

Evidence suggests that implicit bias contributes greatly to decreased quality of care and subsequent poor outcomes in maternal healthcare settings and beyond (Saluja & Bryant, 2021). For example, this article found that Black and Latina women are more likely to have medically unnecessary C-sections than White women. As C-sections lead to more complications than vaginal deliveries, these patients are automatically more susceptible to poor outcomes and even death, all because of a provider's implicit bias. Additionally, stressful situations and environments, such as those in which pregnant and laboring women are often seen, have been associated with an increase in poor care due to implicit bias. In these high-pressure situations, healthcare professionals must rely on their training and unconscious muscle memory to care for their patients in this fast-paced environment. However, this means that the potential to rely on implicit bias is heightened under these circumstances as well (Saluja & Bryant, 2021).

Although it is clear in the literature that implicit bias greatly impacts patient care, many healthcare workers do not recognize this fact (Saluja & Bryant, 2021). Researchers have found that 84% of healthcare providers acknowledge that racial disparities exist and that they play a role in the care that their patients receive. However, only 29% acknowledge that they are influenced by implicit bias or that this bias impacts their patients negatively, demonstrating that many providers are not yet able to take responsibility for their part in contributing to unequal treatment and poor outcomes and are thus perpetuating this behavior. Additionally, many providers continue to hold the outdated belief that there are fundamental biological differences between races. This contributes to implicit bias and its consequences as many still believe that

Black individuals are less sensitive to pain than White patients, for example. Because of these beliefs, research shows that Black and Hispanic women are less likely to receive an epidural for pain management during delivery, amplifying the dissatisfaction with the healthcare system that many Black and Brown patients experience (Saluja & Bryant, 2021).

In addition to inequities regarding pain perception and pain management, patient-provider communication is often a source of dissatisfaction as well (Saluja & Bryant, 2021). As implicit bias influences the way that one thinks and feels about another individual, it also subconsciously impacts the way in which they communicate with that person, both verbally and non-verbally. Therefore, Black and Brown women are more likely to feel patronized and dismissed by their provider than White women who present the same concerns. This too, contributes to poor outcomes and increased mortality for Black and Brown women as, far too often, they are not listened to or taken seriously, causing early signs of a complication to be missed (Saluja & Bryant, 2021).

The authors suggest that cultural humility training must become standard practice for healthcare workers and that these programs must be emphasized and improved (Saluja & Bryant, 2021). Through cultural humility – a step beyond cultural competence – implicit bias can be combatted. By each individual acknowledging that they have implicit biases and then doing the work to override these biases through conscious relearning, the negative effects that implicit bias has on patients can be lessened. Therefore, each provider would be better prepared to see the whole patient in front of them for who they are and what they need in order to provide individualized, equitable, and high-quality maternal care, thus decreasing the preventable deaths to which implicit bias greatly contributes (Saluja & Bryant, 2021).



A strength of this article is that it provides a good definition and overview of implicit bias and how it contributes to poor outcomes and maternal mortality (Saluja & Bryant, 2021).

Research on this topic is continuing to emerge and expand and this article is a clear and concise narrative on this topic. A weakness of this article is that it does not provide specific details on strategies to curb implicit bias. It speaks to cultural humility training yet does not explain explicitly what this training should look like (Saluja & Bryant, 2021).

In their article, Siden et al. (2022) propose a framework for reducing implicit bias in maternity care settings. Although previous research supports that implicit bias contributes to poor health outcomes for women of color in maternity care settings, there is a lack of research on specific interventions and trainings to combat these biases. Therefore, the authors developed a framework for decreasing the role that implicit bias plays in healthcare. They propose that all staff within the healthcare field – from providers to custodial staff and everyone in between – should receive education on reducing implicit bias. Specifically, the authors identify three critical categories for achieving this goal: education and self-awareness, communication, and cognitive reframing. They also highlight the importance of emphasizing patient engagement and participation throughout the development of these training processes (Siden et al., 2022).

In the domain of education and self-awareness, the authors suggest training that emphasizes cognitive science and self-reflection (Siden et al., 2022). These methods will help participants to identify their biases as well as to understand how their brains work to perpetuate these biases. Additionally, the authors recommend various modalities of teaching to ensure that this education is accessible to all healthcare workers. One such suggestion is to use asynchronous online modules or activities in conjunction to didactic lectures or grand rounds to reinforce the material in a self-paced manner. They also highlight the importance of using the

Implicit Associations Test, a free online resource used to identify an individual's biases, as this tool will aid in self-reflection and self-awareness. Lastly, the authors recommend employing experienced educators who are experts in this field to facilitate the training sessions and discussions (Siden et al., 2022).

Multiple research articles have identified communication as an area for improvement in the provision of safe and culturally appropriate care, both in maternal health settings and beyond (Siden et al., 2022). Therefore, the authors recognize this as another important domain for addressing implicit bias, especially as many women of color have reported that they have received inadequate and patronizing communication from their provider during perinatal care appointments. Many patients also report a lack of eye contact, short and dismissive statements, impatience, interruptions, and lack of empathy while communication with providers. The authors recommend improving these interactions through training healthcare workers to communicate with empathy and patience as well as to emphasize building a connection with their patients and to embrace their autonomy and shared decision-making models of care. They suggest incorporating this training into both pre-licensing education as well as in-service professional development trainings (Siden et al., 2022).

Because of the nature of implicit bias, cognitive reframing practices are required to effectively override the unconscious assumptions caused by implicit bias (Siden et al., 2022). This practice is supported by previous research demonstrating that "habit-breaking" practices are most effective as long-term solutions for addressing implicit bias in other healthcare settings. Through this practice, healthcare workers actively recognize when they are making assumptions or relying on bias. They can then consciously reframe their thinking through stereotype replacement or by taking on the perspective of another through which to view the situation.

Therefore, the authors recommend incorporating this practice into maternity care settings through training sessions with expert facilitators that focus on cognitive reframing as well as facility and system wide reframing (Siden et al., 2022).

Lastly, the authors highlight the need for patient engagement as each facility works to address implicit bias and implement these interventions as well as standardization of evaluating the outcomes of such interventions (Siden et al., 2022). By promoting patient involvement, healthcare facilities will be able address the specific concerns of their patient populations. They can then take these needs into consideration when implementing their interventions to decrease implicit bias in maternity care settings, patient interactions, and provider decision making. As reducing implicit bias is not an easily measurable goal, it is difficult to concretely evaluate the effectiveness of these interventions and trainings. Therefore, the authors call for standardized outcome measures to evaluate bias reduction interventions (Siden et al., 2022).

A strength of this article is the comprehensive nature of the proposed framework (Siden et al., 2022). The authors identify three key categories of needed change and provide strategies for addressing each one. A limitation of this article is that this framework is only theoretical at this point. At the time of publishing, these training interventions had not been put into action or tested by a real-life maternity care facility. Therefore, further steps are needed to determine the effectiveness of this proposed training beyond the hypothetical and academic worlds (Siden et al., 2022).

### **Maternity Care Experiences and Inequities**

In their article, Altman et al (2020) describe interviews they conducted with women of color to learn about their perspectives and recommendations regarding the maternal care they had received. In previous research, themes and suggestions for how to improve maternal health

outcomes for women of color have been presented, but these have all come from researchers or healthcare professionals. Therefore, the authors of this article sought to learn from a sample of this population directly what could make their experiences with the healthcare system more positive and less traumatic. This is especially important as previous research has shown that listening to patients, and specifically women of color, is critical to improving their experiences and health outcomes. Therefore, these own-voice recommendations too are critical for achieving this goal (Altman et al., 2020).

Twenty-two women were interviewed for this study (Altman et al., 2020). Participants were recruited from a community organization providing childcare, case management, and financial services for low-income individuals in San Francisco, California. The participants self-identified as Black, African American, Hispanic, Latina, Asian, Native American, or mixed race. Each woman participated in a semi-structured interview taking place within the postpartum period. The interviews were then transcribed and analyzed to identify common themes and recommendations (Altman et al., 2020).

For patient-provider interactions, themes that emerged from the interviews included spending quality time, relationship building, making connections, patient-centered and individualized care, and shared decision making (Altman et al., 2020). Many of the participants expressed that they often felt rushed during their appointments and as though they were not given enough time to feel heard and valued by their providers. When the providers took even a small moment to reassure the patients or just be there with them, especially during labor and delivery, participants reported increased satisfaction, appreciation for the provider, and that this small act improved their overall experiences. Therefore, they recommended increasing the time of face-to-face appointments throughout the perinatal period as well as the providers using

reflective listening techniques and making eye contact with their patients to help make the patients feel heard, valued, and not rushed or dismissed (Altman et al., 2020).

Additionally, participants reported that they wanted to form a connection and meaningful relationship with their providers and to receive individualized care (Altman et al., 2020). They wanted to be remembered by the provider across visits and to feel as though they had developed trust and an emotional connection with them. Participants also reported that they often felt a lack of compassion or empathy from their providers during their interactions and as though the providers were only concerned with their pregnancy and not them as a person.

Recommendations for improvement from the interviewees include providers having real conversations with their patients outside of their health concerns, sharing information from their own life to create a two-way connection, taking notes to help them remember the patients for subsequent visits, taking the time to learn about the individuals as people instead of just patients, and respecting and taking into consideration each person's unique circumstances and needs (Altman et al., 2020).

Participants reported increased satisfaction with patient-provider interactions when they felt they were truly included in making any decisions about their health, pregnancy, or child (Altman et al., 2020). The patients wanted their providers to acknowledge and respect their lived experience as well as their opinions regarding their health. However, they often felt as though their knowledge and opinions were not respected and taken into consideration in their own care. To improve a patient's autonomy, participants recommended providers listening to their patients and treating them as essential partners in decision making (Altman et al., 2020).

The themes of continuity of care, supportive health system structures, racial and ethnic representation, and implicit bias training emerged relating to experiences with the healthcare

system as a whole in this study (Altman et al., 2020). Many of the participants reported that they receive fragmented care, often seeing different nurses and providers at each appointment. This left the patients having to repeat their history and concerns over and over again to different people and never feeling as though they had a connection with their providers. They also reported feeling more vulnerable and less cared for when they saw multiple providers instead of just one. Therefore, they recommend keeping providers consistent as well as having the same nurse each day when in the hospital for delivery and recovery in order to improve the quality and continuity of care that the patient receives (Altman et al., 2020).

Many of the participants found that the healthcare system, as it is currently structured, does not support the needs that many women of color have (Altman et al., 2020). For example, participants reported that they wished there had been more accessible healthcare options available. Additionally, they identified a need for more flexibility within the healthcare system, especially related to appointment scheduling and insurance coverage and transferability. One of the largest gaps that was identified is the need for multiple services to be available at one single location. Many participants reported being sent to various clinics and locations for the management of their different symptoms. This was very stressful for the patients as many lacked reliable transportation, childcare, or the ability to take time off work. Therefore, they recommend that all services be combined into a single clinic visit (Altman et al., 2020).

The lack of racial and ethnic representation among their providers emerged as a concern for many of the participants as well (Altman et al., 2020). They emphasized the importance of having providers that look like them and who they feel understand them through shared identities and life experiences. Additionally, many participants expressed that they felt much more comfortable with providers who were also women of color as opposed to White providers. Many

felt judged and dismissed by White providers and reported less of a meaningful connection or relationship with these providers. Overall, the participants recommended more diversity within the healthcare field as having providers with whom they share identities is important for fostering trust and positive experiences within the healthcare system (Altman et al., 2020).

Lastly, the participants called for the education of healthcare professionals to decrease implicit bias, stereotyping, judgement, and discrimination in their interactions with the healthcare system (Altman et al., 2020). Many participants expressed that healthcare professionals do not receive adequate training in these areas and that this leads to potentially devastating real-world consequences for their patients. Additionally, participants noted that racism is so ingrained in the structure of society that it is perpetuated even within the “objective” textbooks used to teach healthcare professionals. They also emphasize the need for hands-on experiences with people who are different from the healthcare workers instead of only theoretical knowledge to be included in their training to create a mindset in which each person is seen as an individual and not as a representative of a certain group or race and are treated with dignity and respect (Altman et al., 2020).

A strength of this article is that it presents real, own-voice information about barriers to quality care faced by women of color regarding maternal health as well as the healthcare system in its entirety (Altman et al., 2020). Additionally, direct quotations are included in the narrative, speaking to the authenticity of the remarks and the identified themes. A limitation of this article is that it is not necessarily generalizable to women of color as a larger population. These participants all lived in the same community and were recruited from a single organization. Therefore, a larger sample is needed for results that are more representative of a wider population (Altman et al., 2020).

In their study, Johnson et al. (2019) explore the disparities in the way that women's pain is evaluated and treated based on the individual's race and ethnicity. Previous studies support the idea that patients often receive unequal treatment related to pain management from healthcare providers based on their race. However, no study had specifically explored this issue in the obstetric population. Therefore, the researchers sought to discover the link between race and evaluation and treatment of postpartum pain (Johnson et al., 2019).

This was a retrospective cohort study of women from a University of North Carolina hospital conducted from 2014 to 2016 (Johnson et al., 2019). Women were only included in this analysis if they had given birth via a C-section. Women were excluded if they delivered vaginally, if their C-section had resulted in a hysterectomy, if they went under general anesthesia, if they were given a patient-controlled analgesia (PCA) pump or IV opioids post-surgery, if they were known opioid users, or if the information in their electronic chart was incomplete. In total, 1,701 women were analyzed in this study. Clinical and demographic data was collected from the chart of each participant, including their self-identified race and ethnicity as either Asian, Black, Hispanic, White, or other (Johnson et al., 2019).

In the electronic charts at this hospital, the evaluation and subsequent treatment of postpartum pain are broken down into subgroups based on the number of hours post-delivery (Johnson et al., 2019). For this study, data from the 0–24-hour range and 25-48-hour range was included. As a part of standard care, nurses must ask their patients about their pain level throughout the shift, document these values, and medicate the patient accordingly based on their pain level and the available medications per the provider's order. In this case, standard order sets included in the care of all women after a C-section stipulated that non-steroidal anti-inflammatory drugs (NSAIDs) should be given as needed for a pain level of four out of ten or



higher (moderate pain). Additionally, these order sets included that opioids should be given as needed for pain of seven out of ten or higher (severe pain). The researchers went into the charts of the eligible women and calculated the number of times that a pain assessment was documented and what medications were then given. The researchers also took note of the number of severe pain scores documented for each patient. Statistical analysis was then used to determine whether a difference existed across races and ethnicities (Johnson et al., 2019).

The researchers found that the beginning demographic information gathered on all of the participants varied by race and ethnicity (Johnson et al., 2019). White and Asian women were more likely to have private insurance, to be married, and to have received thorough prenatal care than Hispanic or Black women or those who selected the “other” category. Additionally, Black and Hispanic women were found to have fewer incidences of preterm birth as well as babies in the neonatal intensive care unit (NICU) and more Black and Hispanic women had a body mass index (BMI) of 30 or higher (Johnson et al., 2019).

Additionally, there were differences in the number of times pain was assessed as well as the severity of the pain and what medications were given across the races and ethnicities (Johnson et al., 2019). Black, Asian, and Hispanic women all had a lower number of pain assessments documented as compared to White women. This difference was statistically significant with a p-value of less than 0.05 during both the 0-24 hour and 25-48 hour time points. Additionally, Black women had the highest incidence of severe pain noted during both time periods. Hispanic women had the next highest episodes of severe pain followed by White women and then Asian women. No significant difference was noted for those who identified as “other.” Lastly, Black, Hispanic, Asian women, and women who identified as “other” all received less overall pain medication than White women during both windows of time, even

though they reported severe pain more often than the White women. These women of color received both fewer doses of opioid medication for severe pain as well as fewer doses of NSAIDs for moderate pain than the White women. These results were all statistically significant with p-values less than 0.05 and reinforced that racial and ethnic disparities are all too common within the healthcare system and that personal biases play a large role in maintaining these inequities (Johnson et al., 2019).

A strength of this study is that it provides evidence to suggest that there really is a difference in how pain is assessed and treated among women of color as compared to White women (Johnson et al., 2019). Additionally, this study expanded the literature to include data specific to the obstetric and postpartum populations which had not been studied previously. However, a limitation is that the only thing considered in this study was the data from the patient charts. Because of this, there is no way to know if errors were made when the data was put into the charts or if there were any other factors that may have influenced the results, such as support people being present, for example (Johnson et al., 2019).

### **Interventions to Decrease Maternal Deaths**

In their narrative review, Ahn et al. (2020) present interventions and initiatives that are currently active to reduce maternal deaths in the United States. Because the maternal mortality rate in the US is so high compared to other high-income countries, the authors wished to explore and better explain why this is as well as to suggest ways that these deaths can be prevented. They begin by describing current data collection methods for surveilling maternal deaths, the epidemiology and causes of these deaths, and the factors that contribute to poor outcomes in maternity healthcare. The authors further break down these contributing factors into three

categories: patient level factors, community level factors, and health system level factors (Ahn et al., 2020).

Patient level factors that increase a woman's risk of maternal death include advanced maternal age, preexisting conditions, substance use disorders, mental health disorders, and race and ethnicity (Ahn et al., 2020). Evidence suggests that approximately 33% of all maternal deaths occur in women over the age of 35. Additionally, research shows that women with chronic conditions, especially preexisting obesity, are more likely to suffer complications from their pregnancy or delivery and are therefore more likely to die than those without chronic conditions. Emerging research also shows a connection between maternal mental health and substance use disorders and increased risk for complications and death. Specifically, one study found that the pregnancies and deliveries of women who are dependent on opioids are over four times more likely to result in the mother's death than the average pregnancy and delivery. Additionally, there has been a marked increase in maternal opioid misuse over the past several decades, further contributing to the high rate of maternal deaths in the US. Lastly, the researchers note that racial and ethnic disparities in maternal healthcare and outcomes are well documented in the literature as contributing greatly to the maternal mortality rate (Ahn et al., 2020).

The authors identified lack of access to healthcare services as the main community level factor contributing to maternal mortality (Ahn et al., 2020). Even if local healthcare services are available, many communities still do not have nearby specialty care, including maternal health services. Additionally, if these resources are available, not all patients have access to the transportation needed to actually make use of these services. Therefore, research shows that women from rural or lower-income communities are more likely to die during delivery than

women from urban areas, with one study noting a 9% increase in mortality risk for these rural patients as compared to their urban counterparts (Ahn et al., 2020).

For health system level factors, the authors noted a lack of standardized response to obstetric emergencies and lack of adequate postpartum care as contributing to maternal mortality (Ahn et al., 2020). Research has shown that there are substantial gaps in the way that obstetric emergencies are handled as well as how and when they are first recognized. Therefore, facilities must follow existing protocols for such emergencies and new standardized protocols should be developed for all common emergent complications. Additionally, as the postpartum period is a time in which many maternal deaths occur, the authors call for a more standardized approach to postpartum care. Potential interventions include comprehensive and patient-centered postpartum care instead of the one or two general postpartum visits that many women attend (Ahn et al., 2020).

To combat the high maternal mortality rate, both federal and state initiatives have been launched to aid in decreasing maternal deaths (Ahn et al., 2020). One focus of improving maternal health outcomes is data surveillance. Although the systems for reporting maternal deaths in the US have improved significantly in the last 20 years, more improvement is needed to ensure that maternal deaths are being tracked accurately. Therefore, federal funding has been given to maternal mortality review committees all throughout the country to help increase their resources and therefore the accuracy of their data collection (Ahn et al., 2020).

Many states have also expanded their telehealth services to include maternal care, in hopes of making healthcare services more accessible to all and thus improving patient outcomes, a goal that is supported by the preliminary results (Ahn et al., 2020). Several states are emphasizing education as well. They are focusing on trainings for healthcare professionals on

topics that have been identified as priorities by the specific state, such as mental health, substance use, and racial disparities. These states are also working to provide education for the patients themselves to empower them to participate actively in their care (Ahn et al., 2020).

Additionally, multiple states are changing the way that they provide maternal healthcare (Ahn et al., 2020). Many have adopted a modified home care model, such as North Carolina's Pregnancy Medical Home program through which pregnant patients with Medicaid receive individual case managers and more lenient payment schedules. Providers are also incentivized to deliver as many babies vaginally as possible through this program as they will receive more reimbursement for these deliveries as compared to C-sections. Other similar maternal care models emphasize the psychosocial needs of their patients as well as tend to their physical concerns throughout the perinatal period. A large federal initiative, The Strong Start for Mothers and Newborns, has been adopted by most states in the US as well, and preliminary results from this program show a decrease in poor maternal health outcomes (Ahn et al., 2020).

The Alliance for Innovation on Maternal Health (AIM), a program working to decrease maternal mortality, encourages and helps individual states to implement existing clinical protocols (Ahn et al., 2020). These clinical protocols and safety bundles are essential for decreasing maternal mortality as they provide step-by-step directions to follow in the event of several common obstetric emergencies. Similarly, other groups and programs aid in the development of quality improvement guidelines and toolkits that have demonstrated their effectiveness in decreasing preventable maternal deaths. Lastly, the Maternal Early Warning Criteria (MEWC) has been widely implemented. Studies show that this system, designed to alert clinicians to early warning signs of maternal complications, is effective in the early recognition

and treatment of complications and can thus be helpful in decreasing maternal mortality (Ahn et al., 2020).

A strength of this review is its thorough description of current initiatives as well as discussion of other interventions that have not yet been implemented (Ahn et al., 2020). Additionally, the interventions that it presents are specifically targeted towards the maternal healthcare setting and their subsequent outcomes. A limitation of this article is that it does not provide a lot of details on individual interventions and instead provides just a general overview (Ahn et al., 2020).

A study conducted by Sliwa et al. (2018) explores methods for decreasing the incidence of maternal deaths in the postpartum period caused by cardiovascular disorders. Although most definitions of maternal deaths only include the first 42 days after delivery, the authors argue that this causes many late maternal deaths (within one year of delivery) to go unreported and unacknowledged. Specifically, this pilot study sought to determine the effectiveness of creating a multi-disciplinary/multi-specialist clinic to care for women with cardiovascular disease (CVD) up to one year postpartum as well as the effectiveness of continued beta blocker therapy for women with a left ventricular ejection fraction of less than 45% (Sliwa et al., 2018).

This prospective study took place in Cape Town, South Africa where pregnant or postpartum women with signs and symptoms of CVD were seen at a cardiac-obstetric clinic (Sliwa et al., 2018). There they were stratified into one of four categories based on the severity of their disorder by using criteria established by the WHO. Women in the higher severity classes (two through four) were included in this study (Sliwa et al., 2018).

The researchers conducted the study first with 152 women over a two-year period and then with a second group of 117 women over the next two years (Sliwa et al., 2018). Those who

were pregnant in both groups were closely followed by the joint cardiac-obstetric team throughout the whole pregnancy. Postpartum women in the first group received standard follow-up care while postpartum women in the second group received additional interventions. These interventions included initiating or continuing beta blocker therapy for women with an ejection fraction of less than 45% as well as closer follow-up care than those in the first group received. Additionally, other medications specific to the individual's condition were prescribed or necessary surgical procedures were recommended. These women were initially seen at the cardiac-obstetric clinic within the first two to six weeks after delivery and were then referred to the appropriate specialty team based on their individual diagnosis where they were monitored until they had reached one year after delivery (Sliwa et al., 2018).

Data was collected at the initial clinic visit, all intrapartum follow-up visits, at six months postpartum, and at one year postpartum (Sliwa et al., 2018). Adverse events were separated into three groups for analysis: cardiac events, obstetric events, and neonatal events. Cardiac events consisted of cardiac death, admission or readmission to the hospital for pulmonary edema or heart failure, arrhythmias, symptomatic tachycardia, and stroke. All other complications were classified as either obstetric or neonatal events. Original demographic information was similar across both groups and statistical analysis was used to present the results (Sliwa et al., 2018).

At the one-year mark, 94.1% of patients in the first group were still alive and 99.1% of those in the second group had survived (Sliwa et al., 2018). Of the ten women who did die from cardiac events, only one of the deaths occurred within the first 42 days after delivery, supporting the hypothesis that late maternal deaths from CVD are more common than those in the immediate postpartum period. Additionally, eight of the ten deaths were from peripartum cardiomyopathy. Overall, 34% of the pregnant women in group one developed heart failure

during the pregnancy and 20% of these cases required hospital admission. Only nine pregnant women in the second group developed heart failure and only 10% were admitted. This finding was statistically significant with a p-value of 0.057. It was also seen that 32% of those in the first group were admitted for heart failure within the first year postpartum while the incidence of this in the second group was only 14%. This result was statistically significant as well, with a p-value of 0.0008 (Sliwa et al., 2018).

These results support the effectiveness of multi-specialty care throughout pregnancy and the postpartum period for women with confirmed CVD (Sliwa et al., 2018). They also support the need to increase the definition of maternal deaths from CVD past the first 42 days after delivery as well as to ensure that patients with CVD are on appropriate drug regimens during and after their pregnancy. This study also demonstrates the effectiveness of close follow-up monitoring for patients with CVD during the first postpartum year. If these interventions are implemented, there is evidence to suggest that they can decrease the incidence of maternal deaths from CVD, which is a leading cause of maternal mortality worldwide (Sliwa et al., 2018).

A strength of this study is its design with long-term follow-up care and data collection (Sliwa et al., 2018). Another strength is that this study built off previous data and its findings are consistent with the outcomes of similar studies. However, a limitation is that this study was conducted only from a single clinic in South Africa. Because of this, the findings cannot necessarily be generalized beyond this population or immediate area, let alone beyond the country or to other continents (Sliwa et al., 2018).

Another study reviews available literature on PPH and methods to decrease and prevent them (Feduniw et al., 2020). The authors define early PPH as 500mL of blood loss from a vaginal delivery or 1000mL from a C-section within 24 hours of delivery. They further break



these down into minor PPH (500-1000mL of blood lost), moderate (1001-2000mL), and severe (greater than 2000mL). Although the focus of this thesis remains fixed on maternal mortality, the authors of this review also make note of other complications caused by excessive blood loss that does not lead to death, such as kidney damage, anemia, liver failure, and respiratory distress (Feduniw et al., 2020).

To conduct this review, PubMed was searched for any articles discussing PPH (Feduniw et al., 2020). Included studies were published between 2014 and 2019 and other inclusion criteria were that the studies had to all use the same definition of early PPH, they had to be published in English, and they had to include at least 250 participants. Overall, 52 studies were analyzed in this review. The included studies all focused on one of five topics related to PPH: pharmacologic treatment or prevention, medical simulation exercises, surgical interventions, managing the hemorrhage with blood products, and the measurement of blood loss (Feduniw et al., 2020).

The authors found that there are inconsistent prevention recommendations across countries and agencies (Feduniw et al., 2020). For example, for pharmacologic prophylaxis of PPH, WHO recommends the use of oxytocin, carbetocin, misoprostol, and/or ergometrine/methylergometrine. However, other professional organizations either recommend different doses of these same medications or different medications all together. Additionally, some studies support the effectiveness of one drug over another while other studies may disagree with or even contradict these results. Therefore, more research is needed to standardize these recommendations and ensure that all women are receiving the best possible care that will be most effective in preventing PPH and the subsequent complications, including death (Feduniw et al., 2020).

As for treatment of PPH, the authors found more consistency across studies and recommendations (Feduniw et al., 2020). Because uterine atony is the leading cause of early PPH, fundal massage is the first line of treatment. This intervention consists of firmly massaging the top segment of the uterus (the fundus) to expel any clots or retained tissue that may be present and to ensure that the uterus becomes appropriately firm in order to stop any bleeding. Bimanual uterine massage is also recommended. This is when one hand massages the uterus internally while the other massages externally and transabdominally. Second-line treatments include intrauterine tamponade devices, such as a Foley catheter or other balloon catheters, as these have been shown to be 80-90% effective in decreasing bleeding post-delivery. Additionally, the reviewed studies support the use of compression sutures to stop uterine bleeding. However, there is disagreement on the most effective suture type and intrauterine tamponade remains more effective than any suturing technique (Feduniw et al., 2020).

The authors also recognize that concurrent pharmacologic interventions must be implemented alongside these nonpharmacologic treatments and the administration of 10-30 units of oxytocin is the most widely supported drug of choice to treat PPH (Feduniw et al., 2020). Additionally, studies support the use of systemic vasoconstrictors as well as administration of IV fluids to expand blood volume. When needed, evidence also supports the use of blood products, such as packed red blood cells, fresh frozen plasma, or prothrombin and platelets. One study also recommends the use of a cell-saving device while others add fibrinogen and clotting factors to the list of recommendations. If no interventions are effective in stopping the PPH, hysterectomies are the last resort in order to preserve the life of the patient (Feduniw et al., 2020).

Lastly, multiple studies provide evidence of the effectiveness of medical simulations (Feduniw et al., 2020). These exercises allow medical personnel to practice implementing the above interventions and working together in a high-stress situation without the pressure of being in a real life or death scenario with a patient. Studies show that simulations decrease errors, increase teamwork and cooperation, and lead to faster implementation of potentially life-saving interventions, making simulations an invaluable tool in decreasing deaths and complications from PPH. These simulations also provide an opportunity to practice quantifying the amount of blood loss which is critical to early recognition and appropriate treatment of PPH (Feduniw et al., 2020).

A strength of this study is its design as a systematic review (Feduniw et al., 2020). Additionally, the inclusion criterion that each reviewed study had to include at least 250 participants strengthens the results of this review and makes them more generalizable and representative of a wider sample of women. A limitation of this study may have been the way that the data was reported. The results were not presented in a way that made it possible to determine what information came from what study and therefore the narrative could have used more clarity (Feduniw et al., 2020).

## **Synthesis of the Literature**

### **Maternal Mortality Overview**

The maternal mortality rate in the United States is alarmingly high and, therefore, copious amounts of research has been done on this topic. Wong and Kitsantas (2020) explored the quality of maternal healthcare and what contributes to this high number of maternal deaths in their systematic review. Included studies demonstrated the effectiveness of existing clinical protocols and safety bundles as well as standardized discharge education for new mothers after

delivery. Areas in need of improvement include communication, multiprofessional team collaboration, access to quality maternal healthcare, and interventions to decrease implicit bias and discriminatory practices (Wong & Kitsantas, 2020).

Additionally, Attanasio et al. (2022) found that postpartum follow-up visit attendance needs improvement. Those least likely to attend their postpartum appointments were found to be Black and Brown women, individuals with Medicaid, and those with chronic conditions, thus amplifying the racial and socioeconomic disparities caused by social determinants of health that already present in maternal health outcomes (Attanasio et al., 2022). Overall, more research is needed to develop methods of improving the areas that these reviews have identified as lacking, such as communication and bias reduction trainings for providers, strategies to improve postpartum visit attendance, and methods to increase access to high-quality maternal healthcare.

### **Racism, Social Determinants of Health, and Maternal Mortality**

There is overwhelming evidence to suggest that quality of care and health outcomes often vary greatly across racial lines, especially with the issue of maternal mortality. To further explain this issue, Prather et al. (2018) explored the sexual and reproductive health outcomes of Black women in the context of their historical mistreatment by the healthcare system as well as by society as a whole. They then make recommendations for improving the health outcomes of this population, such as comprehensive education on culturally appropriate care, increasing access to healthcare services, policy development to promote equity, and further research on this topic (Prather et al., 2018).

Armstrong-Mensah et al. (2021) specifically explored access to healthcare, social determinants of health, and racial discrimination in pregnant Black women. They then provide potential ways to decrease these inequities and to improve obstetric outcomes for this population,

including the expansion of Medicaid, more qualified maternal health practitioners, and required bias reduction and equity education (Armstrong-Mensah et al., 2021). From this research, it is evident that racial disparities are a problem and various studies propose potential methods for improvement. However, more research is needed to put these interventions to the test and to provide information about effective techniques for reducing bias and discrimination.

### **Implicit Bias**

Implicit bias has been identified as an indirect cause of maternal mortality. Saluja and Bryant (2021) discuss how implicit bias causes a decrease in quality of care which contributes greatly to poor health outcomes for Black and Brown women in maternity care settings. Additionally, this article notes that many healthcare workers have yet to recognize their part in the provision of biased and discriminatory care, although the majority acknowledge that the issue of unequal care exists. To combat these biases, Saluja and Bryant (2021) call for cultural humility education for all healthcare workers. Additionally, Siden et al. (2022) propose a framework for decreasing implicit bias in maternal healthcare. This framework consists of education and self-awareness, improving communication skills, and cognitive reframing to decrease the reliance on implicit bias that leads to poor care. Overall, further research is needed on the lasting effects of these interventions for reducing implicit bias and therefore reducing discriminatory care practices.

### **Maternity Care Experiences and Inequities**

In considering the issue of racial disparities in maternity care settings, it is critical that the experiences and suggestions of those most affected by these inequities be considered. Therefore, Altman et al. (2020) interviewed Black and Brown women to learn about their experiences navigating the world of maternal healthcare. Recommendations identified by participants

include providers spending time with and getting to know their patients outside of their health condition, involving the patients in all decision making to promote and protect their autonomy, and ensuring that all care is individualized to fit the specific patient's needs. More broadly, participants suggested prioritizing continuity of care, racial and ethnic representation in the healthcare field, and more flexible appointment scheduling and insurance coverage (Altman et al., 2020).

Additionally, Johnson et al. (2019) explored the differences in evaluation and treatment of postpartum pain across races and ethnicities. They found that women of color were more likely to experience severe pain and yet were evaluated less frequently and given fewer pain medications than White women, highlighting yet again the inequities present in the healthcare system (Johnson et al., 2019). Based on these results, more research is needed to explore the implementation of recommended interventions as well as the development of ways to hold healthcare workers accountable for assessing and managing pain in all patients, regardless of race or ethnicity.

### **Interventions to Decrease Maternal Deaths**

Ahn et al. (2022) present an overview of initiatives to decrease maternal mortality in the US while Sliwa et al. (2018) and Feduniw et al. (2020) provide information on specific interventions. Current initiatives include improving surveillance data to monitor maternal deaths, encouraging the use of telehealth services for perinatal care appointments and concerns, adopting more holistic maternal care models, early warning sign monitoring for complications, and the implementation of existing clinical protocols and safety bundles (Ahn et al., 2022).

As hypertensive and cardiovascular disorders are leading causes of maternal mortality, Sliwa et al. (2018) further explored this issue, focusing on cardiovascular disease (CVD) and its

effect on late maternal mortality. They discovered that multi-disciplinary OB and cardiac prenatal and postpartum care helped to decrease maternal mortality from CVD. This study also argues for a broader definition of maternal mortality to include the entire first postpartum year instead of just the first 42 days (Sliwa et al., 2018).

Lastly, Feduniw et al., (2020) review current strategies for managing postpartum hemorrhages (PPH), another leading cause of maternal deaths. This review identified various effective methods for the management of PPH, including the use of uterotonic agents, intrauterine balloon tamponade, compression sutures, and hysterectomy as a last resort. Feduniw et al. (2020) also highlight the importance and effectiveness of simulation trainings for preparing healthcare workers to respond efficiently to obstetric emergencies. Overall, more data on the actual effectiveness of current initiatives is needed as well as more research on why CVD-related deaths often occur so late after delivery. More research is also needed to develop consistent definitions and best practice guidelines for obstetric emergencies such as PPH.

## CHAPTER THREE

### Best Practice Recommendations

The next chapter of this thesis will present recommendations for maternal healthcare settings to implement into practice. These recommendations are based on the issues and evidence identified from the articles included in the above literature review. Comprehensive recommendations for the entirety of the perinatal period will be provided as well as specific recommendations for the antepartum, intrapartum, and postpartum periods.

#### Comprehensive Perinatal Recommendations

Many recommendations that were identified in the literature apply to the entire perinatal period, and the implementation of these interventions will aid in prenatal, intrapartum, and postpartum health outcomes. One recommendation from level I and level VI evidence is to improve continuity of care in maternal health settings (Altman et al., 2020; Wong & Kitsantas, 2020). Multiple studies have noted the fragmented care that is common throughout the perinatal period, especially for those with limited access to care or resources. Therefore, it is recommended that patients see the same provider throughout their pregnancy, delivery, and postpartum period to aid in the formation of trust and mutual respect between the patient and provider (Altman et al., 2020; Wong & Kitsantas, 2020).

Another recommendation supported by multiple articles and levels of evidence (I through VI) is to improve communication within the maternal healthcare field (Altman et al., 2020; AWHONN, 2022; Saluja & Bryant, 2021; Siden et al., 2022; Wong & Kitsantas, 2020). Siden et al. (2022) suggest communication training for providers and other healthcare workers while Wong and Kitsantas (2020) call for the improvement of both patient-provider communication as well as communication between members of the healthcare team. Altman et al. (2020) and



AWHONN (2022) also identified communication as a priority for improvement as many women of color often feel patronized, dismissed, ignored, and disrespected when communicating with providers. Based on this overwhelming evidence, it is recommended that further training on clear and respectful communication be emphasized within training for healthcare workers. As part of their communication with patients, it is critical that providers take the time to really listen to their patients and to involve them in all decision making regarding their own health (Altman et al., 2020; AWHONN, 2022).

Perhaps the most widely supported recommendation identified in this sample of the literature is the need for better access to maternal healthcare services, especially among the Black and Brown, rural, underserved, and Medicaid or uninsured patient population (Ahn et al., 2020; Altman et al., 2020; Armstrong-Mensah et al., 2021; Attanasio et al., 2022; Prather et al., 2018; Wong & Kitsantas, 2020). Altman et al. (2020) call for increased insurance coverage and transferability while Wong and Kitsantas (2020) recommend streamlining services to eliminate long wait times for booking appointments and for seeing the provider at each visit. Additionally, lack of transportation has been widely identified as a barrier to accessing care (Ahn et al., 2020; Altman et al., 2020; Armstrong-Mensah et al., 2021). Because many areas lack a sufficient number of maternal health providers and clinics, patients must travel far from their homes to access any such services, exacerbating the already present problem of transportation (Armstrong-Mensah et al., 2021).

Sliwa et al. (2018) advocate for joint cardiac-obstetric clinics for patients with preexisting cardiac conditions throughout pregnancy as well. This idea should also be expanded beyond just cardiac care to create multi-disciplinary clinics for all kinds of preexisting conditions so that patients can receive all of the care that they need from one single clinic, thus addressing multiple

barriers to receiving care (Altman et al., 2020). Overall, it is recommended that access to maternal healthcare services be improved by expanding insurance coverage, decreasing wait times, providing reliable transportation to and from appointments, increasing the number of maternal health providers, and creating multi-disciplinary “one-stop-shop” perinatal care clinics. These interventions will greatly decrease maternal mortality in the United States by ensuring that all patients are able to access high-quality care services in the event of potentially fatal complications.

Lastly, a need for further education and trainings amongst healthcare workers has been identified (Ahn et al., 2020; Altman et al., 2020; Armstrong-Mensah et al., 2021; Feduniw et al., 2020; Prather et al., 2018; Saluja & Bryant, 2021; Siden et al., 2022). Ahn et al. (2020) noted a lack of standardized response and preparation for obstetric emergencies. Therefore, Feduniw et al. (2020) recommend regular simulation training for healthcare professionals focusing on common complications of the intrapartum and immediate postpartum periods. This intervention, supported by level I evidence, will allow members of the healthcare team to practice real-world scenarios relating to common obstetric emergencies, such as postpartum hemorrhage, without the real-world consequences. These simulation trainings have demonstrated their effectiveness in multiple studies and will therefore aid in decreasing preventable maternal deaths through preparing the healthcare team to respond quickly and cohesively to such emergencies (Feduniw et al., 2020).

In addition to simulations, training and education on the reduction of implicit bias and discriminatory care is desperately needed within the field of maternal healthcare and is supported by levels of evidence III through VII (Ahn et al., 2020; Altman et al., 2020; Armstrong-Mensah et al., 2021; Johnson et al., 2021; Prather et al., 2018; Saluja & Bryant, 2021; Siden et al.,

2022). Armstrong-Mensah et al. (2021) and Saluja and Bryant (2020) recommend mandatory cultural humility training for healthcare workers. Additionally, Siden et al. (2022) propose a framework for reducing implicit bias and subsequent discriminatory care through comprehensive training consisting of self-awareness, communication, and cognitive reframing education. Through these practices, healthcare workers will be able to recognize their own biases and consciously re-train their thinking to lessen the effects of these unconscious biases (Siden et al., 2022).

Lastly, fundamental restructuring in the way that healthcare professionals are taught is needed (Altman et al., 2020). Through their education, future healthcare workers must be exposed to many different populations so as to promote respectful interactions with all cultures and ethnicities that they will encounter throughout their careers. Additionally, racism is engrained so deeply into society that the textbooks used to teach future healthcare professionals perpetuate White-centric ideas while tokenizing those of other races, ethnicities, and cultures (Altman et al., 2020). Therefore, these educational tools must be revised and rewritten to provide a broader, more diverse, more inclusive, and more accurate representation of the entire population. If this anti-bias training and educational restructuring is implemented, women of color are less likely to be mistreated, ignored, and dismissed, thus decreasing the number of preventable maternal deaths within this vulnerable population that makes up such a large proportion of maternal mortality in the United States.

### **Antepartum Recommendations**

Early and adequate prenatal care is essential for promoting the health and wellbeing of both mom and baby throughout pregnancy. However, research shows that not all women receive sufficient care prior to delivery. Specifically, Johnson et al. (2019) found that White and Asian

women were much more likely to have received prenatal care during their pregnancy than Black and Hispanic women. Additionally, according to the WHO (2019), many lower-income women do not receive sufficient prenatal care as they encounter several barriers to accessing these essential services. Therefore, addressing the overarching issue of lack of access to care is critical. To begin, Ahn et al. (2020) recommend the provision of case managers and psychosocial support throughout the prenatal period as well, especially for low-income patients with fewer available resources. This recommendation is based on level V evidence.

### **Intrapartum Recommendations**

Extensive evidence supports the effectiveness of existing clinical protocols and safety bundles for decreasing preventable maternal deaths, such as those addressing postpartum hemorrhage, active management of the third stage, and preeclampsia (Ahn et al., 2020; Feduniw et al., 2020; Wong & Kitsantas, 2020). Therefore, facilities must implement and follow these guidelines, as they are interventions supported by level I and V evidence and they have demonstrated their effectiveness in emergent situations.

Additionally, Wong and Kitsantas (2020) recommend the development and use of a standardized discharge education checklist. This intervention, based on level I evidence, will ensure that patients being discharged home from the hospital after delivery are receiving all of the necessary discharge instructions. If patients are given thorough and accurate discharge teaching, they will be better equipped to quickly recognize potential complications that may arise after discharge and seek appropriate care, thus decreasing their risk of dying from these treatable complications (Wong & Kitsantas, 2020).

Lastly, Johnson et al. (2019) identified discrepancies in pain assessments and management across races in women who had just given birth. Specifically, Black and Hispanic

women were assessed less frequently for pain than their White counterparts. Therefore, a standardized schedule and protocol for assessing the pain of all intrapartum and postpartum patients – an intervention based on level II evidence – is needed to combat these differences (Johnson et al., 2019).

### **Postpartum Recommendations**

Attanasio et al. (2022) identified a need for increased attendance at postpartum follow-up visits. They also found that Black and Brown women, those with Medicaid or no insurance, and those with chronic conditions were less likely to attend their appointments than those without other conditions, patients with private insurance, and White women. Therefore, this level I evidence calls for the improvement of access to postpartum care services (Attanasio et al., 2022). Additionally, Ahn et al. (2020) recommend the implementation of a standardized schedule of needed postpartum visits to promote the provision of comprehensive and thorough postpartum care. This recommendation is based on level V evidence and, in conjunction with increasing postpartum visit attendance, will aid in the early recognition of complications that could lead to maternal deaths if not caught and treated early.

Lastly, Sliwa et al. (2018) recommend the expansion of the definition of maternal deaths to go beyond the first 42 days after delivery. Although this may cause the maternal mortality rate to increase even more on paper, it will provide more accurate data as many pregnancy-related deaths occur after the first 42 days, especially in cases of complex cardiovascular conditions that have been exacerbated by pregnancy and delivery. Therefore, Sliwa et al. (2018) suggest defining maternal deaths as occurring within one year after delivery, a recommendation based on level II evidence.

## Summary

Several recommendations for best practice have been identified from the literature. Comprehensive recommendations for the entire perinatal period include improving continuity of care and communication between healthcare staff and patients, with a focus on listening to the patients (Altman et al., 2020; AWHONN, 2022; Saluja & Bryant, 2021; Siden et al., 2022; Wong & Kitsantas, 2020). Additionally, there is a great need for increased access to high-quality maternal healthcare care and OB services across the perinatal period (Ahn et al., 2020; Altman et al., 2020; Armstrong-Mensah et al., 2021; Attanasio et al., 2022; Prather et al., 2018; Wong & Kitsantas, 2020). Increasing insurance coverage and transferability, reducing wait times to see a provider, providing reliable transportation to services, and creating multidisciplinary clinics are all recommendations for improving access to care for all patients. Lastly, further education for healthcare workers is recommended in the forms of anti-bias training, restructuring of the way that future practitioners are taught, and simulation trainings to promote more holistic, respectful, equitable, and higher-quality care (Ahn et al., 2020; Altman et al., 2020; Armstrong-Mensah et al., 2021; Feduniw et al., 2020; Prather et al., 2018; Saluja & Bryant, 2021; Siden et al., 2022).

Specific antepartum recommendations include the promotion of early and adequate prenatal care through addressing the social determinants of health that serve as barriers for many patients and providing them with case managers to help navigate these barriers (Ahn et al., 2020; Johnson et al., 2019; WHO, 2019). Intrapartum recommendations include reinforcing the use of effective existing safety bundles and clinical protocols, the implementation of a standardized discharge checklist, and enforcing a standardized schedule for pain assessment and treatment (Ahn et al., 2020; Feduniw et al., 2020; Johnson et al., 2019; Wong & Kitsantas, 2020). Lastly, expanding the definition of and care provided in the postpartum period as well as implementing a

standardized schedule for postpartum follow-up visits and increasing attendance at such visits are recommendations specific to the postpartum period (Ahn et al., 2020; Attanasio et al., 2022; Sliwa, 2018). By implementing the discussed recommendations, patient experiences and outcomes within maternal healthcare can be improved, especially for women of color.

## CHAPTER FOUR

The final chapter of this thesis will present a hypothetical plan for the dissemination and implementation of the best practice recommendations that have been identified from the research. Although many recommendations arose from the literature, this thesis will focus only on a model of implementation for anti-bias training and education. Through the analysis of available articles, implicit bias leading to discriminatory care was identified as the predominate root cause of the poor outcomes and disproportionate number of maternal deaths experienced by women of color (Ahn et al., 2020; Altman et al., 2020; Armstrong-Mensah et al., 2021; Johnson et al., 2019; Prather et al., 2018; Saluja & Bryant, 2021; Siden et al., 2022; Wong & Kitsantas, 2020). Therefore, the implementation of the training to address these biases will be the exemplar presented in this chapter. To implement this change, the Plan-Do-Study-Act (PDSA) cycle will be used. This model, created by the Institute for Healthcare Improvement (2020), provides a framework for making changes to practice in healthcare settings. By using this cycle, a plan for the intended change can be developed, implemented, evaluated, and modified as needed to ensure its success (Institute for healthcare Improvement [IHI], 2020).

### **Plan**

The first step in the PDSA model is to develop a plan for the implementation of the proposed intervention (IHI, 2020). The initial setting for this anti-bias training will be a community OB clinic in Southern Arizona that provides prenatal and postpartum care. This is the ideal setting for the initial implementation of this intervention as patients visit such clinics quite regularly throughout pregnancy and immediately following delivery. Because of the structured frequency of these visits, the intervention will have the most impact in this clinic setting where most patient-provider interactions take place and there is time for relationships to



be formed. The training session will be offered on at least two different dates to ensure that all staff are available to attend this required education session. To provide an incentive, staff will be paid their hourly wage for all time spent at this in-service training. Coordination with the clinic management will be necessary for permission, final approval, and support for this training.

The actual training session will begin with the participants taking a pre-test with questions about the existence of implicit bias, the role that it plays in patient care and patient outcomes in maternal healthcare settings, and ways that bias can be combatted. An overview of the data regarding the maternal mortality rate in the US as well as the statistics demonstrating the disproportionate number of Black and Brown women who die from pregnancy-related complications will then be presented. Next, a review of the evidence supporting anti-bias education for improving maternal health outcomes for women of color will be presented. These materials will convey the importance and urgency of this topic and instill in the participants why this mandatory training is taking place and how it will ultimately benefit their patients.

After the initial overview and data is presented, all participants will begin by taking the Implicit Associations Test. This is an online tool developed by Harvard University that aids in the identification of an individual's biases by presenting the test taker with words and images that they must sort into categories such as "good" or "bad" (Project Implicit, 2011). In this way, the test measures how strongly the individual associates the given word or image with stereotypes as well as the value they place in this concept. There is some disagreement over the reliability of this test as the individual's answers and attitudes are not necessarily fixed, and therefore, the same person may get different scores each time that they test. However, there is still value in using this tool as it will help the participants to identify their own possible areas of bias (Project Implicit, 2011). The participants will not be required to share their results;

however, time will be made for any who wish to share and discuss their experience taking this test.

The main content of the session will then be presented and will use existing anti-bias training models, such as that proposed by Siden et al. (2022) focusing on self-awareness, non-biased communication and cognitive reframing. The training will be facilitated by an expert in this field with experience in conducting trainings focusing on bias recognition and reduction, specifically in healthcare settings (Siden et al., 2022). There will be time for questions and discussion of the content before the completion of the training session. After the discussion section, the participants will be asked to retake the test that they took at the very beginning of the training. Ideally, their scores on the post-test will be higher than those on the pre-test, indicating the effectiveness of the teaching.

### **Do**

In this next step of the PDSA cycle, the training session will actually be implemented (IHI, 2020). The plan that has been developed will be followed. The participants will arrive, take the pre-test, learn about the importance of this intervention, take the Implicit Associations Test, and discuss their experiences. They will then learn strategies for self-reflection, respectful communication, and cognitive reframing. Finally, they will take the post-test at the very end of the training session and the pre-test and post-test responses and scores will be collected for analysis.

### **Study**

Next, the success of the intervention will be studied and evaluated (IHI, 2020). The responses on the pre-test and post-test will both be thoroughly reviewed. The overall scores from each test set will be compared and the percent change will be calculated to provide a

measure of the effectiveness of the education that was provided to the clinic staff. The facilitator will also be asked how they felt that the session was received by the participants. Lastly, elements from the discussion portion will be recorded and used to reveal the perspectives held by the staff about implicit bias and their own role in perpetuating the reliance on such biases during their interactions with patients.

### **Act**

After the evaluation of the training session has been completed, the last step in the PDSA model is to make any necessary modifications to the intervention (IHI, 2020). Any gaps that have been identified from the analysis of the tests scores and discussion content will be addressed. If, for example, the cognitive reframing content was not well understood as evidenced by little or no increase in correct answers on this portion of the post-test as compared to the pre-test, then this section can be revised and clarified for future training sessions. Once any necessary modifications have been made, the cycle can be repeated and the intervention tweaked until the desired outcome is accomplished (IHI, 2020).

### **Summary**

The dissemination of best practice recommendations is critical to raising awareness of the issue of maternal mortality as well as ensuring that strategies for reducing maternal deaths are made available to all who may wish to implement these interventions. For the sake of this thesis, only the dissemination of the recommended anti-bias training was presented. This hypothetical plan follows the PDSA model of implementing change into healthcare practice and begins in a community obstetric clinic. During the session, participants will receive training on self-reflection, appropriate communication, and cognitive reframing. They will also have the opportunity to take the Implicit Associations Test to help them identify their own biases. The

effectiveness of the training session will be evaluated using data from pre-tests and post-tests and any needed modifications will be made to improve the implementation of this intervention.

Ideally, this anti-bias education will be effective and can therefore be more widely implemented into practice. In this way, implicit bias can be recognized and reduced, leading to the provision of more holistic and equitable care and decreased mortality for women of color within maternal healthcare settings.

## References

- Ahn, R., Gonzalez, G. P., Anderson, B., Vladutiu, C. J., Fowler, E. R., & Manning, L. (2020). Initiatives to reduce maternal mortality and severe maternal morbidity in the United States: A narrative review. *Annals of Internal Medicine*, *173*(11), 3-10.  
<https://doi.org/10.7326/M19-3258>
- Altman, M. R., McLemore, M. R., Oseguera, T., Lyndon, A., & Franck, L. S. (2020). Listening to women: Recommendations from women of color to improve experiences in pregnancy and birth care. *Journal of Midwifery & Women's Health*, *65*(4), 466-473.  
<https://doi.org/10.1111/jmwh.13102>
- American College of Obstetricians and Gynecologists. (2021). *Eliminating preventable maternal mortality and morbidity*. ACOG. Retrieved February 24, 2023, from  
<https://www.acog.org/advocacy/policy-priorities/maternal-mortality-prevention>
- Armstrong-Mensah, E. A., Dada, D., Bowers, A., Muhammad, A., & Nnoli, C. (2021). Geographic, health care access, racial discrimination, and socioeconomic determinants of maternal mortality in Georgia, United States. *International Journal of Maternal and Child Health and AIDS*, *10*(2), 278–286. <https://doi.org/10.21106/ijma.524>
- Association of Women's Health, Obstetric and Neonatal Nurses. (2021a). Guidelines for active management of the third stage of labor using oxytocin: AWHONN practice brief number 12. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *50*(4), 499-502.  
<https://doi.org/10.1016/j.jogn.2021.04.006>
- Association of Women's Health, Obstetric and Neonatal Nurses. (2023, February 28). *Post-birth warning signs education program*. AWHONN. Retrieved March 12, 2023, from

<https://www.awhonn.org/education/hospital-products/post-birth-warning-signs-education-program/>

Association of Women's Health, Obstetric and Neonatal Nurses. (2021b). Quantification of blood loss: AWHONN practice brief number 13. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 50(4), 503-505. <https://doi.org/10.1016/j.jogn.2021.04.007>

Association of Women's Health, Obstetric and Neonatal Nurses. (2021c). Racism and bias in maternity care settings. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 50(5). <https://doi.org/10.1016/j.jogn.2021.06.004>

Association of Women's Health, Obstetric and Neonatal Nurses. (2022). Respectful maternity care framework and evidence-based clinical practice guideline. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 51(2). <https://doi.org/10.1016/j.jogn.2022.01.001>

Attanasio, L. B., Ranchoff, B. L., Cooper, M. I., & Geissler, K. H. (2022). Postpartum visits attendance in the United States: A systematic review. *Women's Health Issues*, 32(4), 369-375. <https://doi.org/10.1016/j.whi.2022.02.002>

Centers for Disease Control and Prevention. (2020, November 24). *Health disparities*. Centers for Disease Control and Prevention. Retrieved March 8, 2022, from <https://www.cdc.gov/healthyyouth/disparities/index.htm#:~:text=Related%20Pages,experienced%20by%20socially%20disadvantaged%20populations>

Centers for Disease Control and Prevention. (2022, February 23). *Maternal mortality rates in the United States, 2020*. Centers for Disease Control and Prevention. Retrieved March 8, 2022, from <https://www.cdc.gov/nchs/data/hestat/maternal-mortality/2020/maternal-mortality-rates-2020.htm>

- Centers for Disease Control and Prevention. (2023, March 23). *Pregnancy mortality surveillance system*. Centers for Disease Control and Prevention. Retrieved April 20, 2023, from <https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm>
- Feduniw, S., Warzecha, D., Szymusik, I., & Wielgos, M. (2020). Epidemiology, prevention and management of early postpartum hemorrhage — a systematic review. *Ginekologia Polska*, 91(1), 38–44. <https://doi.org/10.5603/gp.2020.0009>
- Healthy People 2030. (2022). *Social Determinants of Health*. Healthy People 2030. Retrieved March 8, 2022, from <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>
- Howell, E. A., Brown, H., Brumley, J., Bryant, A. S., Caughey, A. B., Cornell, A. M., Grant, J. H., Gregory, K. D., Gullo, S. M., Kozhimannil, K. B., Mhyre, J. M., Toledo, P., D’Oria, R., Ngoh, M., & Grobman, W. A. (2018). Reduction of peripartum racial and ethnic disparities: A conceptual framework and maternal safety consensus bundle. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 47(3), 275-289. <https://doi.org/10.1016/j.jogn.2018.3.004>
- Institute for Healthcare Improvement. (2020). *Testing and measuring changes with PDSA cycles*. Institute for Healthcare Improvement. Retrieved April 21, 2023, from [https://education.ihl.org/topclass/topclass.do?expand-New\\_CourseHome-id=462337255-activitytype=28-learningPage=TrainingHistory](https://education.ihl.org/topclass/topclass.do?expand-New_CourseHome-id=462337255-activitytype=28-learningPage=TrainingHistory)
- Johnson, J. D., Asiodu, I. V., McKenzie, C. P., Tucker, C., Tully, K. P., Bryant, K., Verbiest, S., & Stuebe, A. M. (2019). Racial and ethnic inequities in postpartum pain evaluation and

management. *Obstetrics & Gynecology*, 134(6), 1155-1162.

<https://doi.org/10.1097/AOG.0000000000003505>

McKinney, E. S., James, E. R., Murray, S. S., Nelson, K. A., & Ashwill, J. W. (2018). *Maternal-child nursing* (5th ed.). Elsevier.

Prather, C., Fuller, T. R., Jeffries, W. L., Marshall, K. J., Howell, A. V., Belyue-Umole, A., & King, W. (2018). Racism, African American women, and their sexual and reproductive health: A review of historical and contemporary evidence and implications for health equity. *Health Equity*, 2(1), 249–259. <https://doi.org/10.1089/heq.2017.0045>

Project Implicit. (2011). *Implicit Associations Test*. Project Implicit. Retrieved April 21, 2023, from <https://implicit.harvard.edu/implicit/iatdetails.html>

Saluja, B. & Bryant, Z. (2021). How implicit bias contributes to racial disparities in maternal morbidity and mortality in the United States. *Journal of Women's Health*, 30(2), 270-273. <https://doi.org/10.1089/jwh.2020.8874>

Siden, J. Y., Carver, A. R., Mmeje, O. O., Townsel, C. D. (2022). Reducing implicit bias in maternity care: A framework for action. *Women's Health Issues*, 32(1), 3-8. <https://doi.org/10.1016/whi.2021.10.008>

Sliwa, K., Azibani, F., Baard, J., Osman, A., Zühlke, L., Lachmann, A., Libhaber, E., Chin, A., Ntsekhe, M., Soma-Pillay, P., Johnson, M. R., Roos-Hesselink, J., & Anthony, J. (2018). Reducing late maternal death due to cardiovascular disease - A pragmatic pilot study. *International Journal of Cardiology*, 272, 70–76. <https://doi.org/10.1016/j.ijcard.2018.07.140>



Wong, P. C. & Kitsantas, P. (2020). A review of maternal mortality and quality of care in the USA. *The Journal of Maternal-Fetal & Neonatal Medicine*, 33(19), 3355-3367.

<https://doi.org/10.1080/14767058.2019.1571032>

World Health Organization. (2019). *Maternal mortality*. World Health Organization. Retrieved March 8, 2022, from <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>

World Health Organization. (2023). *Maternal mortality*. World Health Organization. Retrieved April 20, 2023, from <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>