

# FETAL–INFANT MORTALITY REVIEW IN BALTIMORE CITY



October 2016 | Interim FY 2016-2017 Report

Baltimore City's Fetal–Infant Mortality Review process helps our community understand why babies are dying and how we can take action. The FIMR Team is undertaking a special project in FY 2016 and 2017 to understand the systems challenges and needs of pregnant women and mothers with mental health and substance use disorders who experienced a fetal or infant death.

This is the interim report of issues uncovered by the FIMR Team during case review.



**B'more for  
Healthy Babies.**  
*Every baby counts on you*

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## INTERIM FY 2016-2017 REPORT

### WHAT IS FETAL–INFANT MORTALITY REVIEW?

A community’s infant mortality rate is considered to be one of the most sensitive signs of the overall health of the community. In Baltimore City, typically about 200 total fetal deaths (also referred to as stillbirths) and infant deaths occur every year. Baltimore’s infant mortality rate has traditionally been one of the highest in the country and is a serious public health problem.

Fetal–Infant Mortality Review (FIMR) is a process a community can undertake to better understand why babies in the community die and what steps can be taken to prevent fetal and infant deaths. Through the Baltimore City FIMR process—which enables us to take an in-depth look at the circumstances around a baby’s death—we examine the social, economic, health, and health care factors associated with fetal and infant mortality. Then we take action as a community to make education, policy, and systems changes that will improve the health and care of mothers, families, and babies in Baltimore City.

FIMR began in Baltimore City in 1993, just three years after the National FIMR program was established by the American College of Obstetricians and Gynecologists and the U.S. Maternal and Child Health Bureau. Today, there are more than 220 state and local FIMR programs in 40 states.

**FIMR asks the basic question, “Why did this baby die, and what can we do to prevent it from happening again?”**

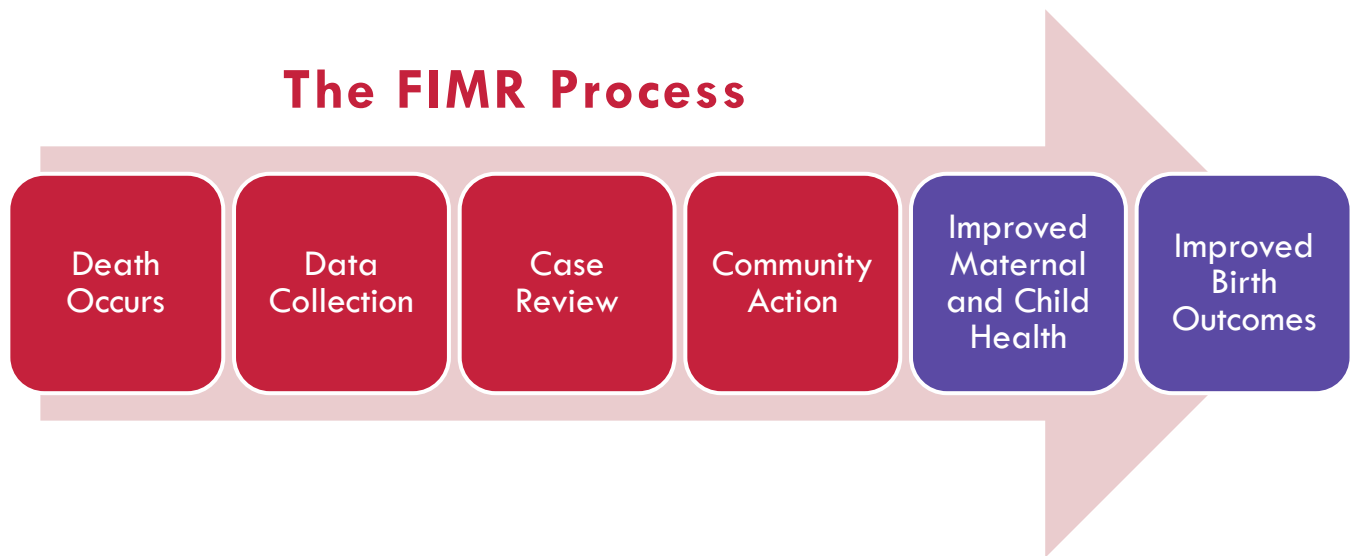
### HOW THE FIMR PROCESS WORKS

The FIMR process begins when a fetal or infant death occurs in Baltimore City. If the death is considered to be the result of a natural process (rather than a death requiring investigation by law enforcement or Child Protective Services), the case is referred to FIMR. Information is gathered about the death from medical, public health, and social services records. A public health nurse conducts a voluntary interview with the baby’s mother to record her experiences with her pregnancy and the health care and support services that were available to her and her family.

Every month, the FIMR Case Review Team meets to review the information gathered from records and interviews with mothers. The Case Review Team is made up of health care providers and representatives from community agencies who volunteer their time to meet and review the cases. The meetings are confidential, and no identifying information about the mother or her service providers is shared with team members. After

reviewing the cases, the team begins to identify health system and community factors that may have contributed to the deaths and make recommendations for change.

Finally, FIMR’s Community Action Team, composed of leaders of the city’s *B’more for Healthy Babies* initiative who have the ability to create change in public and community agencies and health care systems, as well as its two Neighborhood Action Teams, translate those recommendations into action. Improved policies, systems, and public education lead to improved maternal health and more babies who make it to their first birthdays.



## FIMR’S PROJECT ON BEHAVIORAL HEALTH

During FY 2016 and 2017, the Baltimore City FIMR Case Review Team is using the FIMR process to better understand the systems issues that arise and the needs of mothers when mothers have behavioral health challenges—mental health and substance use disorders—during pregnancy. Previously, the Case Review Team has found that trauma history, mental health conditions, and substance use are prevalent in cases of fetal and infant death. In nearly half of cases reviewed in FY 2015, mothers had documented exposure to trauma, and a third had a diagnosed mental health condition. About a third smoked during pregnancy and a third had history of illicit drug use. Chronic stress, mental health disorders such as depression and anxiety, and substance use during pregnancy, including smoking, contribute to poor preconception health and poor birth outcomes.<sup>1,2,3</sup> The Case Review Team found evidence of few documented behavioral health referrals and supports despite evidence of high need.

The Case Review Team decided to examine in detail the behavioral health factors affecting women’s health and pregnancy with a focus on understanding how preconception mental health concerns may be contributing to women’s ability to access health care and engage in self-care and how the health system responds to women with mental health and substance use concerns. In order to target review of cases in which mothers experienced behavioral health challenges, the team elected to review cases in which the fetal death record or infant birth certificate indicated that the mother had obtained limited or no prenatal care. This criterion was selected based on research showing that mothers with behavioral health challenges are overrepresented among women with limited or no prenatal care, as these challenges make obtaining care more difficult.

From July 2015 to June 2016, the Case Review Team reviewed 16 cases of fetal and infant death in which the mother obtained limited or no prenatal care. In 10 of the 16 cases, the mother was found through medical records to have had a mental health disorder and to be using illicit substances. In one additional case, the mother was found to have a mental health disorder but not to be using illicit substances. In one further additional case, the mother was found to be using illicit substances but had no documented history of a mental health disorder. In four cases, there was no documentation of either a mental health disorder or use of illicit substances. Because mothers in all of these cases obtained limited or no prenatal care, medical records may not have been as complete as for mothers with adequate prenatal care.

### Issues Uncovered During Case Review

Through the case review process, the Case Review Team documented 43 issues of concern across five major categories involving multiple public and private systems.

#### Foundational

In many cases mothers with behavioral health disorders had experienced several challenges and adverse experiences prior to pregnancy, including in childhood, that may have contributed to the development of the behavioral health disorder as well as ongoing difficulties with health and seeking care.

Issue	Impact on Health and Birth Outcomes	Major Systems Involved
Trauma history (e.g., abuse, neglect, intergenerational drug use, intimate partner violence, loss)	Altered stress response system; possible self-medication with tobacco, drugs, and alcohol; established link between traumatic experiences in childhood and intimate partner violence and low birth weight/preterm birth and fetal death	<ul style="list-style-type: none"> <li><input type="checkbox"/> Social services</li> <li><input type="checkbox"/> Health care</li> <li><input type="checkbox"/> Behavioral health</li> <li><input type="checkbox"/> Justice</li> </ul>
First pregnancy as a teen	Added parenting and financial stress affects health and ability to access health care, fewer socioeconomic opportunities, established association with poorer health in later pregnancies	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> <li><input type="checkbox"/> Schools</li> <li><input type="checkbox"/> Behavioral health</li> </ul>
Lower educational attainment	Added financial stress affects health and ability to access health care, fewer socioeconomic opportunities, established association with infant mortality	<ul style="list-style-type: none"> <li><input type="checkbox"/> Schools</li> <li><input type="checkbox"/> Health care</li> <li><input type="checkbox"/> Behavioral health</li> </ul>
Housing instability, homelessness, and poor quality housing	Established association between housing instability and low birth weight/preterm birth, inability to prioritize health when housing is unstable, difficulty achieving good nutrition, environmental exposures may impact birth outcomes	<ul style="list-style-type: none"> <li><input type="checkbox"/> Housing</li> <li><input type="checkbox"/> Social services</li> <li><input type="checkbox"/> Behavioral health</li> <li><input type="checkbox"/> Health care</li> </ul>
Lead paint exposure as a child	Impulsivity and learning disabilities, established association between maternal lead levels and pregnancy complications and low birth weight	<ul style="list-style-type: none"> <li><input type="checkbox"/> Housing</li> <li><input type="checkbox"/> Social services</li> <li><input type="checkbox"/> Behavioral health</li> </ul>

### Added Stress During Pregnancy

Mothers with behavioral health disorders often had experiences during pregnancy that increased their stress levels and may have contributed to difficulties in obtaining prenatal care or engaging in self-care. Women who experience high levels of stress during pregnancy have 25-60% higher risk for preterm delivery, even after accounting for the effects of other established risk factors, compared to women with low levels of stress.<sup>4</sup> Increased stress is associated with conditions such as hypertension and preeclampsia and a variety of health behaviors such as unhealthy eating and smoking, which are risk factors for preterm birth. Stress before and during pregnancy has also been linked to low birth weight, even apart from preterm delivery.<sup>5</sup>

Issue	Impact on Health and Birth Outcomes	Major Systems Involved
Unexpected removal from Medical Assistance and Temporary Assistance for Needy Families rolls, creating need to re-apply and supply documentation again	Added stress, difficulty accessing prenatal care, barriers to accessing services and meeting needs for self-care (e.g., food, safe housing)	<ul style="list-style-type: none"> <li>▣ Health care</li> <li>▣ Social services</li> </ul>
Delays in care due to issues with Managed Care Organizations	Added stress that may impact health, difficulty accessing prenatal care	<ul style="list-style-type: none"> <li>▣ Health care</li> </ul>
Father of the baby incarcerated and/or significantly involved with drugs	Added stress that may impact health, diminished social and economic support during a period of high need	<ul style="list-style-type: none"> <li>▣ Justice</li> <li>▣ Behavioral health</li> </ul>
Intimate partner violence during pregnancy	Added stress that may impact health, lack of physical safety, established association of intimate partner violence during pregnancy with poor birth outcomes	<ul style="list-style-type: none"> <li>▣ Social services</li> <li>▣ Justice</li> <li>▣ Health care</li> <li>▣ Behavioral health</li> </ul>
Father of baby not supportive of pregnancy due to concerns about child support	Added stress that may impact health, adversarial relationships with the father of the baby and family members, compromised social and economic support during a period of high need, ambivalence regarding self-care	<ul style="list-style-type: none"> <li>▣ Social services</li> <li>▣ Economic</li> </ul>
Concern about not having leave from work postpartum	Added stress that may impact health, economic concern, overworking to save up time to use for later leave potentially compromises health	<ul style="list-style-type: none"> <li>▣ Economic</li> </ul>
Transportation barriers	Added stress that may impact health, difficulty accessing care, barriers to accessing services and meeting needs for self-care (e.g., food)	<ul style="list-style-type: none"> <li>▣ Transportation</li> <li>▣ Health care</li> <li>▣ Behavioral health</li> </ul>

**Central Intake System for Pregnant Women**

Baltimore City operates a central intake system for pregnant women who are enrolled in Medicaid or Medicaid-eligible. Prenatal care providers refer pregnant women to this system using the state-mandated Prenatal Risk Assessment (PRA). Care coordination professionals then outreach each woman; assess her eligibility for a variety of programs, including home visiting, WIC, and behavioral health treatment; and link her to these services. Pregnant women who were eligible but did not receive a referral to this system have been shown to be more than five times more likely to have a fetal or infant death.<sup>6</sup> Because some pregnant women in the cases reviewed did not obtain prenatal care at all, they did not enter this system. Other women refused services or experienced challenges during the referral and outreach process.

Issue	Impact on Health and Birth Outcomes	Major Systems Involved
Pregnant women not seeking prenatal care and remaining unidentified by the central intake system prior to delivery	Lack of management of health conditions (e.g., hypertension, diabetes, depression), lack of detection of pregnancy complications (e.g., gestational hypertension and diabetes), missed opportunities for care coordination and supportive services, established association between limited or no prenatal care and poor birth outcomes	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> <li><input type="checkbox"/> Behavioral health</li> </ul>
Lack of completion of the PRA by the prenatal care provider	Missed opportunities for risk assessment, linkages to behavioral health care, home visiting, and other services	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Delays in submission of the PRA by the prenatal care provider	Delayed opportunities for earlier outreach and linkage to services that would support a healthy pregnancy and behavioral health	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Pregnant women unable to be located by outreach, possibly due to high mobility or distrust of system	Missed opportunities for risk assessment, linkages to behavioral health care, home visiting, and other services	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Pregnant women refusing home visiting services, possibly due to distrust of system	Missed opportunities for social support, care, health education, screenings, and linkage to services; established association between home visiting and improved birth outcomes	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>

**Care in Pregnancy**

Prenatal care and care of behavioral health disorders during pregnancy is critical to achieving healthy birth outcomes. The Case Review Team documented numerous instances of gaps in the system of care for pregnant women, missed opportunities for screening and linkage to behavioral health services, and missed opportunities for accurate education about substance use during pregnancy. These instances represent opportunities for collaboration with health care providers on systems change to improve birth outcomes.

Issue	Impact on Health and Birth Outcomes	Major Systems Involved
No or poor treatment of behavioral health problems before and during pregnancy	Established connection between poor mental health and adverse pregnancy outcomes and stillbirth, established connection between substance use and adverse outcomes such as placental abruption	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> <li><input type="checkbox"/> Behavioral health</li> </ul>
No mental health or substance use screening documented in prenatal care	Missed opportunities for behavioral health care that could improve health during pregnancy	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Non-standardized questions used for screening	Decreased rates of disclosure of behavioral health concerns, which leads to missed opportunities for behavioral health care	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Screenings conducted multiple times with different results in one visit, relying on negative result	Possible minimizing of health conditions that have a significant impact on birth outcomes	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Lack of follow-up for positive behavioral health screenings	Missed opportunities for behavioral health care that could improve health during pregnancy	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> <li><input type="checkbox"/> Behavioral health</li> </ul>
No substance use assessment/referral documented following positive toxicology test	Missed opportunities for substance use treatment and overall assessment of behavioral health	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Pregnant women not disclosing a mental health disorder to prenatal care providers	Missed opportunity for referrals to behavioral health care, potentially worsening the mental health condition	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Prenatal care providers lack of knowledge/not obtaining information about mothers' trauma and life history	Missed opportunity to influence plan of care, better understand life circumstances of patients	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> </ul>
Conflicting advice about antidepressant use during pregnancy, women discontinuing use during pregnancy	Mother may go on and off medication at a time when depression at high risk for relapse, established connection between poor mental health and adverse pregnancy outcomes	<ul style="list-style-type: none"> <li><input type="checkbox"/> Health care</li> <li><input type="checkbox"/> Behavioral health</li> <li><input type="checkbox"/> Media</li> </ul>

Issue (cont.)	Impact on Health and Birth Outcomes	Major Systems Involved
Inconsistent messaging/education about marijuana use during pregnancy	Marijuana use leading to increased risk for stillbirth and NICU admissions	<input type="checkbox"/> Health care <input type="checkbox"/> Behavioral health <input type="checkbox"/> Media
Pregnant women’s lack of knowledge of harms of smoking and alcohol use during pregnancy, reinforced by family members	Belief that substance use is not harmful can lead to continued substance use, established connection between substance use and poor birth outcomes	<input type="checkbox"/> Health care <input type="checkbox"/> Behavioral health <input type="checkbox"/> Media
Residential behavioral health treatment providers not responsive to concerns about health/lack of fetal movement	Mother not able to obtain care leading to fetal death	<input type="checkbox"/> Behavioral health

**Care at Delivery, Postpartum, and Interconception**

Care between pregnancies, known as interconception care, as well as care at the time of delivery and postpartum are opportunities to address concerns that may have contributed to the fetal or infant death, improve mothers’ health, and take steps to improve outcomes for a subsequent pregnancy, if the mother desires one. The Case Review Team documented several concerns about mothers’ care following delivery, and these also represent opportunities to collaborate with health care providers to improve the system of care.

Issue	Impact on Health and Birth Outcomes	Major Systems Involved
Lack of empathy/poor communication from hospital providers	Poor quality care, distrust and disuse of health care and social services systems	<input type="checkbox"/> Health care <input type="checkbox"/> Behavioral health
Inconsistent practices regarding toxicology screens at delivery when there is a fetal or infant death	Missed opportunity to intervene when there are other children in the home, missed opportunity for referral to substance use disorder treatment	<input type="checkbox"/> Health care
Prescription of opiates or narcotics to mothers with addictions	Risk of relapse during a period of high stress	<input type="checkbox"/> Health care



Issue (cont.)	Impact on Health and Birth Outcomes	Major Systems Involved
Limitations in physicians’ ability postpartum to address drug use (e.g., inability to begin medication-assisted treatment for opioid dependence)	Poor or no follow-up on referrals to substance use disorder treatment, missed opportunities for treatment	<input type="checkbox"/> Health care <input type="checkbox"/> Behavioral health
No offer of a social work consult prior to postpartum discharge	Missed opportunities for social support, care coordination, grief support, and linkage to services	<input type="checkbox"/> Health care
No screening for depression prior to postpartum discharge	Missed opportunities for social support, care coordination, grief support, and linkage to services	<input type="checkbox"/> Health care
Providers encouraging mothers to seek behavioral health treatment but requiring them to set up their own appointments and follow-up care following postpartum discharge	Poor or no follow-up on referrals, missed opportunities for treatment	<input type="checkbox"/> Health care
Confusing and vague hospital postpartum discharge instructions	Poor or no follow-up on referrals, missed opportunities for treatment	<input type="checkbox"/> Health care
MCOs unaware that a fetal or infant loss has occurred	Missed opportunity for care coordination	<input type="checkbox"/> Health care
Mothers not keeping their postpartum appointments	Missed opportunity for depression screening, family planning counseling, and linkage into primary care for physical and behavioral health	<input type="checkbox"/> Health care
Mother has more significant health and behavioral health needs than can be addressed in a single postpartum visit	Missed opportunities to improve interconception health, worsening health prior to next pregnancy	<input type="checkbox"/> Health care <input type="checkbox"/> Behavioral health

Issue (cont.)	Impact on Health and Birth Outcomes	Major Systems Involved
Lack of coordination of behavioral health care (numerous providers, multiple authorizations over many years)	Poor quality care, worsening interconception health	<input type="checkbox"/> Health care <input type="checkbox"/> Behavioral health
Lack of coordination between behavioral health treatment providers and primary care providers	Poorly coordinated care, worsening interconception health	<input type="checkbox"/> Health care <input type="checkbox"/> Behavioral health
Unintended pregnancy and unmet need for family planning among mothers using substances or with mental health concerns	Unintended and undesired pregnancies, substance-exposed pregnancies	<input type="checkbox"/> Health care <input type="checkbox"/> Behavioral health

## NEXT STEPS FOR FY 2017

As it continues to review cases in which mothers obtained limited or no prenatal care, the FIMR Case Review Team is taking several steps to aggregate data from Vital Records, medical records, the justice system, Baltimore City’s central intake system for pregnant women, and Baltimore’s public behavioral health treatment system to shed additional light on the issues identified through case review. Most important, the Case Review Team is working to draft actionable recommendations to address these issues.

Both the aggregated data and the Case Review Team’s recommendations will be published in the FY 2016-2017 FIMR annual report. They will then be presented in Summer 2017 to the *B’more for Healthy Babies* Core Implementation Team for prioritization and the development of action plans for high-priority recommendations. It is our hope that this special project of FIMR supports the *B’more for Healthy Babies* initiative in improving the behavioral health of women in Baltimore City, which will in turn lead to improved birth outcomes and healthier families and communities.

## FIMR—LOOKING FORWARD

As the *B'more for Healthy Babies* initiative refreshes its strategy for reducing infant death and improving birth outcomes in Baltimore City over the course of FY 2017 and 2018, it will be relying on the FIMR Case Review Team more than ever before. Two related issues are especially critical for the Case Review Team to tackle: Baltimore City's persistent racial disparities in fetal-infant mortality and high rate of very preterm birth and very low birth weight. These babies are extremely vulnerable and are disproportionately black.

To support the work of the Case Review Team and the *B'more for Healthy Babies* Core Implementation Team on these issues, FIMR is undertaking a Perinatal Periods of Risk analysis of fetal-infant mortality in Baltimore City. This method of analysis groups fetal and infant deaths by like underlying causes and enables comparison between groups to help teams better understand the factors that are driving disparities. Preliminary results from the first phase of the analysis show that Baltimore City's fetal-infant mortality is driven primarily by mothers' health prior to pregnancy, with black women experiencing a higher burden of poor health. This in turn leads to higher number of babies being born too soon and too small. A more advanced phase of the analysis will help us better understand the specific factors underlying poorer health.

The Case Review Team and the *B'more for Healthy Babies* Core Implementation Team are committed to addressing racial equity in birth outcomes and will devote the FY 2018 FIMR process to documenting factors relating to structural racism, systems issues, and health before pregnancy to tackle disparities head-on. An important part of this work will involve identifying new strategies to prevent preterm birth and low birth weight, a challenge for communities all over the country facing high infant mortality rates.

We believe the ongoing work of FIMR and *B'more for Healthy Babies* has tremendous capacity to continue to reduce fetal and infant mortality in Baltimore and look forward to a highly productive FIMR process.



*Baby Basics Moms Clubs in Patterson Park North & East (left) and Upton/Druid Heights (right) provide social support to pregnant women while they learn about how to have a healthy pregnancy and talk about the issues that matter most to them with other mothers.*

## ACKNOWLEDGEMENTS

The Baltimore City Health Department is grateful to the members of the FIMR Case Review Team, who volunteered every month in FY 2016 to review cases of fetal and infant death and use their expertise to improve the City's system of care. They make Baltimore City a better place for mothers and babies.

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## Endnotes

- <sup>1</sup> March of Dimes. (2013). Preterm labor. Retrieved from <http://www.marchofdimes.com/pregnancy/preterm-labor-and-birth.aspx>
- <sup>2</sup> Woods, S. M., Melville, J. L., Guo, Y., Fan, M., & Gavin, A. (2010). Psychosocial stress during pregnancy. *American Journal of Obstetrics & Gynecology*, 202(1), 61.e1-61.e7.
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- <sup>4</sup> Wadhwa, P. D., Entringer, S., Buss, C., & Lu, M. (2011). The contribution of maternal stress to preterm birth: Issues and considerations. *Clinical Perinatology*, 38(3), 351-384
- <sup>5</sup> Witt W. P., Cheng, E. R., Wisk, L. E., Litzelman, K., Chaterjee, D., Mandell, K., & Wakeel, F. (2014). Maternal stressful life events prior to conception and the impact on infant birthweight in the United States. *American Journal of Public Health*, 104(S1), S81-S89.
- <sup>6</sup> 2013 Baltimore City analysis of data from FIMR and the central intake system for pregnant women.

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