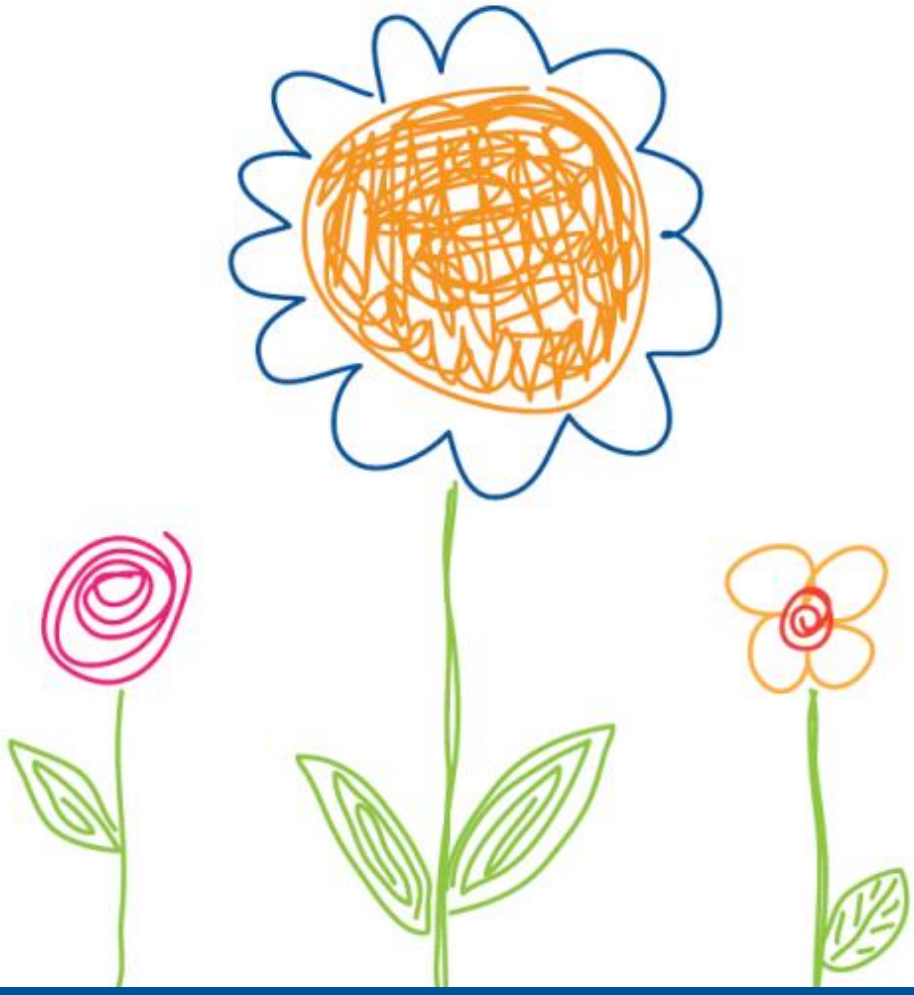

Franklin County
Fetal-Infant Mortality Review (FIMR)

Case Review Team Findings: 2021

(January–December 2021)

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THE CITY OF COLUMBUS
ANDREW J. GINTHER, MAYOR
COLUMBUS PUBLIC HEALTH

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INTRODUCTION

THE PROBLEM

Infant mortality — or the death of a baby before his or her first birthday — is a critical indicator of community health. On average, about three babies die before their first birthday each week in Franklin County. In 2021, Franklin County's preliminary infant mortality rate was 7.9 per 1,000 live births. This represents an increase from the rate of 6.7 per 1,000 live births in 2020. In 2021, 140 babies died before their first birthday[1] and there were 143 Report of Fetal Death forms filed for all fetal losses,[2] regardless of gestational age. Fetal deaths — or the death of a fetus at or beyond 20 weeks gestation — are not included in the infant mortality rate. Fetal and infant deaths are influenced by biological, social, cultural, economic and environmental factors. Community assets and liabilities are not evenly distributed throughout the community, contributing to racial disparities in these and other health outcomes. Our community has experienced a persistent, unacceptable disparity between the loss of babies of color and the loss of white babies. In 2021, Non-Hispanic Black infants in Franklin County were over three times more likely to die than non-Hispanic White infants,[1] a statistic which is higher than the national trend of 2.4 in 2019.[3] With more than 280 fetal and infant deaths in 2021, people across our community are rightfully concerned and seeking solutions.

MORE THAN JUST A MEDICAL ISSUE

Fetal and infant mortality reduction is a complex issue that requires a multipronged prevention approach. Just as there is no single reason why some infants live to see their first birthday while others do not, there is no easy means of combatting this problem. However, research indicates that solutions for reducing fetal and infant mortality and eliminating the disparities which exist in these outcomes must transcend individuals' characteristics and behaviors. A community's assets and liabilities, including its transportation systems, availability of affordable housing, and access to healthy foods and health care, among other items can either help "protect" women from adverse pregnancy outcomes or increase their "risk" of experiencing them.[4] Addressing only medical issues will not solve the fetal and infant mortality crisis.

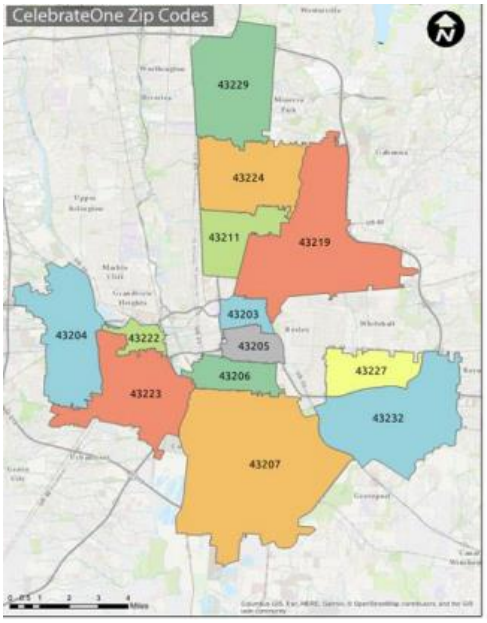
WHERE YOU LIVE MATTERS

Researchers have found that these assets and liabilities, along with the conditions in which people are born, live, learn, work, play and age — otherwise referred to as the Social Determinants of Health (SDOH) — have a significant impact on health outcomes. Health is not something that is limited to a medical setting. Health is in the air people breathe, the water they drink, and the places they live.

Franklin County has neighborhoods where homelessness, poor access to nutritious foods, higher rates of crime and unemployment, lower rates of graduation, limited access to health coverage, and late entry into prenatal care contribute to fetal demise, babies being born too small or too soon, and infants failing to thrive during their first year of life. Eight areas in Franklin County, represented by thirteen ZIP codes, with the highest rates of infant mortality are deemed infant mortality high-priority neighborhoods. (Exhibited in the map in Figure 1.)

CelebrateOne, a place-based, collective impact initiative founded to reduce infant mortality and improve health equity so more babies reach their first birthday in Franklin County, believes that ZIP codes should not be a determinant of health. As CelebrateOne works with community leaders, residents and industries to enhance neighborhood social and economic conditions, Franklin County's Fetal-Infant Mortality Review (FIMR) program has chosen to prioritize

Figure 1: CelebrateOne ZIP Codes



[1] *Infant Mortality Report by City of Columbus https://public.tableau.com/app/profile/columbus/viz/InfantMortalityReport/IMReport. Accessed 8/10/2022.*
[2] *Ohio Department of Health Vital Statistics, analyzed by Columbus Public Health; Data are preliminary as of 8/10/2022.*
[3] *Centers for Disease Control and Prevention, Reproductive Health, Infant Mortality. https://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm. Accessed 7/18/2022.*
[4] *2016 Franklin County FIMR Annual Report. https://www.columbus.gov/WorkArea/DownloadAsset.aspx?id=2147497121. Accessed 8/10/2022.*

cases from the eight high-priority areas highlighted in Figure 1 to enhance the understanding of the life experiences of resident mothers, fathers, and families affected by loss in these areas[4].

SOCIAL DETERMINANTS OF HEALTH

SDOH affect a wide range of health, functioning, and quality-of-life outcomes and risks.

SDOH can be grouped into five domains: economic stability; education access and quality; health care access and quality; neighborhood and built environment; and social and community context.

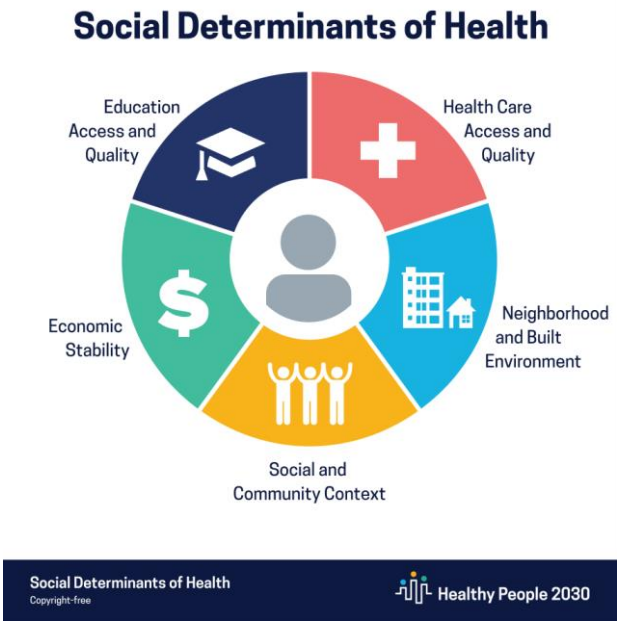
Examples of SDOH include:

- Safe housing, transportation and neighborhoods
- Racism, discrimination and violence
- Education, job opportunities and income
- Access to nutritious foods and physical activity opportunities
- Polluted air and water
- Language and literacy skills

SDOH also contribute to wide health disparities and inequities. For example, people who don't have access to grocery stores with healthy foods are less likely to have good nutrition. That raises their risk of health conditions like heart disease, diabetes and obesity — and even lowers life expectancy relative to people who do have access to healthy foods.

Just promoting healthy choices won't eliminate these and other health disparities. Instead, public health organizations and their partners in sectors like education, transportation and housing need to take action to improve the conditions in people's environments.[5]

Figure 2: Social Determinants of Health



[5] *Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. https://health.gov/healthypeople/objectives-and-data/social-determinants-health Accessed 5/20/2022.*

FRANKLIN COUNTY FIMR PROGRAM

Franklin County's FIMR program is an evidenced-based continuous quality improvement process. It is unique in its exploration of the contextual nature of a well-defined subset of fetal and infant deaths. Cases with preselected risk factors are prioritized, not only to gain a better understanding of the circumstances contributing to local fetal and infant deaths, but to learn more about our community's service system gaps.

CASE SELECTION PROCESS

Perinatal Periods of Risk (PPOR) is a comprehensive approach designed to help urban communities across the U.S. use local data to reduce fetal and infant mortality.[6] The initial analysis divides fetal and infant deaths into four "Perinatal Periods of Risk" based on birth weight and age at death (Figure 3). Because causes of death tend to be similar in each period, when a community finds that its problems lie in only one or two periods of risk, efforts can be focused on those periods. A mortality rate is calculated for each period to allow for comparisons of populations within and between jurisdictions and to examine temporal trends in fetal and infant death. PPOR analyses build data capacity, promotes evidence-based decision making, strengthens partnerships, helps leverage resources and enables systems changes. Urban communities across the U.S., including Columbus, use PPOR as a way to monitor progress in fetal and infant mortality reduction, to guide public health planning and to prioritize prevention activities, including FIMR case selection.

Figure 3: Perinatal Periods of Risk (PPOR) Model

Age at Death

Birth Weight	**Fetal** ≥24 Weeks Gestation	**Neonatal** 0-27 Days	**Post-Neonatal** 28-364 Days
500 – 1499 grams	**Maternal Health/Prematurity** Chronic Disease Prevention Health Behavior Change Perinatal Care		
≥1500 grams	**Maternal Care** Prenatal Care High Risk Referral Obstetric Care	**Newborn Care** Perinatal Management Neonatal Care Pediatric Surgery	**Infant Health** Safe Sleep Injury Prevention Infection Prevention

Guided by CPH's Office of Epidemiology and CityMatCH's PPOR model, FIMR has typically selected cases from the Maternal Health/Prematurity and Maternal Care categories. Recently, based on Phase II PPOR analysis, case selection was expanded to include the Newborn Care and Infant Health categories as well; however, it turned out the majority of cases screening in for Infant Health were sleep-related infant deaths. Since the Franklin County SUID (Sudden Unexpected Infant Death) Board, a subcommittee of the Child Fatality Review (CFR) Board, already reviews those deaths and to not be duplicative, the decision was made to only select those cases for the FIMR Case Review Team (CRT) review if the mother/family participated in an interview with the FIMR Coordinator. Additionally, starting in June 2020, FIMR modified the review selection criteria by removing the categories of Mother Unmarried and Birth Spacing <18 Months; modifying the Mother Was Overweight Pre-Pregnancy category from Body Mass Index (BMI) ≥30 to BMI ≥25; and adding the categories of Hypertension During Pregnancy and Insufficient Prenatal Care. The Birth Spacing <18 Months was added back to the selection criteria in June 2021. The outcome of these changes allowed for a larger and more diverse pool of cases from which to pull cases to be abstracted for the FIMR CRT to review. This process is outlined in Figure 4. A full list of organizations participating in the CRT can be found in Appendix 1.

[6] *What is PPOR? https://www.citymatch.org/perinatal-periods-of-risk-approach/. Accessed 8/9/2022.*

Figure 4: Identifying Cases for Abstraction

1. IDENTIFY DEATHS FROM THE FOLLOWING PPOR CATEGORIES:

Maternal Health/Prematurity
- Fetal death: between 500-1499 grams & ≥24 weeks gestation
- Infant death: between 500-1499 grams, regardless of gestation

Maternal Care
- Fetal death: ≥1500 grams & ≥24 weeks gestation

Newborn Care
- Infant death ≥1500 grams, neonate

Infant Health
- Infant death ≥1500 grams, post neonate

2. PRIORITIZE DEATHS WITH THE FOLLOWING RISK FACTORS:
- Mother is non-Hispanic Black
- Mother had less than a high school education or GED
- Inter-Pregnancy Interval <18 months
- Mother had previous preterm birth
- Mother had previous poor birth outcome
- Mother smoked (within three months prior to pregnancy or while pregnant)
- Mother had hypertension during pregnancy
- Insufficient Prenatal Care
- Mother was overweight pre-pregnancy (BMI ≥ 25)
- Mother enrolled in WIC
- Mother lived in CelebrateOne (C1) or Ohio Equity Institute (OEI) high-priority neighborhoods (ZIP codes indicated in parentheses)
    - C1 neighborhoods: Franklinton (43222, 43223), Hilltop (43204), Morse Rd/161 (43224, 43229), Near East (43203, 43205), South (43206, 43207), Northeast (43219), Linden (43211), Southeast (43227, 43232)
    - OEI neighborhoods: Reynoldsburg (43068), Whitehall (43213), Westside (43228)

A flowchart of the FIMR process, including case selection criteria, is included as Appendix 2.

FAMILY INTERVIEWS

The Franklin County FIMR strives to include the voices of bereaved families in the review process because their stories add vital insight to each case. The FIMR Coordinator conducted extensive outreach to those affected by fetal or infant loss. Of the 40 cases Franklin County FIMR reviewed in 2021, 22.5% of the cases included an interview. Although this is higher than the national average of 15% in 2020, interviews add such richness to a case summary that the team continues to strive for higher engagement. Of the remaining 77.5% of cases, 25% declined to participate (5% “no showed” to a scheduled interview, 5% initially agreed to an interview but were lost to follow-up, and 15% explicitly declined an interview) and 52.5% were unresponsive. While bereaved mothers often elect to participate in the “family interview” alone, these interviews also included one father. FIMR is grateful for the reflections shared by these families. These stories illustrate how significantly the social determinants of health can affect birth outcomes.

PROFILE OF CASES REVIEWED

FIMR seeks to review cases that meet selection criteria within a year of the decedent's death. Of the 40 cases reviewed in 2021, 21 deaths occurred in 2020 and 19 occurred in 2021. On average, FIMR brought cases to the CRT seven months after the date of death.

- **Total Number of Cases Reviewed, 2021:** 40 (25 Fetal, 15 Infant)

Table 1: Fetal/Infant Characteristics of Reviewed FIMR Cases and all Franklin County Fetal-Infant Deaths

Fetal/Infant Characteristic	% Total FIMR Cases (N=40)	% Total Franklin County Deaths* (N=241)
Gestational Age (weeks)		
Extremely preterm (<28)	32.5	59.8
Very preterm (28-32)	30.0	12.0
Moderate/late preterm (33-36)	7.5	11.2
Term (≥37)	30.0	14.9
Unknown	0.0	2.1
Birth Weight (grams)		
Extremely Low (<1000)	40.0	50.6
Very Low (1000-1499)	17.5	4.6
Low (1500-2499)	17.5	12.9
Normal (2500-3999)	22.5	15.4
High (≥4000)	2.5	0.8
Unknown	0.0	15.8

**Source: Ohio Department of Health Vital Statistics, analyzed by Columbus Public Health; Data are preliminary as of 7/12/2022.*

Table 2: Maternal Characteristics of Reviewed FIMR Cases and all Franklin County Fetal-Infant Deaths

Maternal Characteristic	% Total FIMR Cases (N=40)	% Total Franklin County Deaths* (N=241)
Race/Ethnicity		
Non-Hispanic White	35.0	34.4
Non-Hispanic Black	55.0	50.6
Non-Hispanic Other	2.5	6.2
Hispanic/Latinx	7.5	5.4
Unknown	0.0	3.3
Age Group (years)		
<20	10.0	9.1
20-34	60.0	64.7
≥35	30.0	23.7
Unknown	0.0	2.5
Education		
Less than high school	32.5	19.1
High school/GED	35.0	28.2
Some college, no degree	15.0	17.0
College/professional degree	17.5	30.3
Unknown	0.0	5.4
Other Characteristics		
Resident of CelebrateOne/ OEI neighborhood	82.5	44.0
First pregnancy	35.0	24.5

**Source: Ohio Department of Health Vital Statistics, analyzed by Columbus Public Health; Data are preliminary as of 7/12/2022.*

FIMR LEADING PRESENT & CONTRIBUTING FACTORS[7]

To analyze case findings, approximately 200 factors from the detailed list of Present and Contributing Factor codes – adapted from the National Center for Fatality Review and Prevention's (NCFRP) FIMR "Present & Contributing Variables" Data Dictionary – were prioritized according to the following:

(1) The factor was ***present*** in at least 20 of the 40 reviewed cases (Table 3); and

(2) The FIMR CRT considered the factor to be responsible for or directly ***contributing*** to at least five of the 40 reviewed fetal-infant deaths (Table 4).

Table 3: Factors Present in ≥20 of the 40 Reviewed FIMR Cases

Factor Name	Definition	Prevalence
Lack of Home Visiting	Not enrolled in evidence-based home visiting despite eligibility	37 (93%)
Mother's Pre-Pregnancy weight	Mother's pre-pregnancy Body Mass Index (BMI) was underweight (<18.5), overweight (>25.0), or obese (>30.0)	32 (80%)
No Autopsy	No autopsy is completed	32 (80%)
Unsafe Neighborhood	MOB or family discloses that there is general fear for safety in the neighborhood where they resided during pregnancy and while the infant was alive and/or neighborhood known to law enforcement or public health to have a high incidence of violence, crime and neglect	31 (78%)
Lack of Dental Assessment	A systematic collection, analysis, and documentation of the oral and general health status and patient needs was not done during pregnancy	30 (75%)
Child Protective Services (CPS) Referrals	Any CPS referrals, substantiated or not	29 (73%)
Inadequate Assessment of Non-Medical Needs	Family has unassessed social needs (e.g., housing, income, food, transportation, employment, childcare, medical insurance)	29 (73%)
Inconsistent or Unclear Information	Abstractor or review team members felt some part of the record was ambiguous, unclear, or data from different sources is found to be conflicting	24 (60%)
No postpartum birth control	MOB was not given postpartum birth control prior to discharge from the delivery admission	23 (58%)
Positive Drug Test	The mother had any positive toxicology screen for substances during pregnancy or at delivery	22 (55%)
History of Abuse to MOB	Disclosure or evidence of past physical, emotional, or sexual abuse of mother, not with current partner or FOB, not during the pregnancy or while infant is alive	22 (55%)
History of Other Chronic Disease	MOB has been diagnosed with chronic disease	22 (55%)
Tobacco Use: History, but Not Current	Any use by the mother of any tobacco product prior to pregnancy up to the time of the infant's conception	20 (50%)
Illicit Drugs: History, but Not Current	Any use by the childbearing parent of any illegal substance in the 12 months before the infant's conception	20 (50%)

MOB = Mother of Baby, FOB = Father of Baby

[7] *See previous FIMR reports for more information about Present & Contributing Factors: https://www.columbus.gov/FIMR/*

Table 4: Factors Contributing to ≥5 of the 40 Reviewed FIMR Cases

Factor Name	Definition	Prevalence
Congenital Anomaly	Birth defects, malformations, chromosomal conditions, and other conditions noted prenatally, at delivery or on autopsy	12 (30%)
MOB Did Not Seek Timely Medical Care	MOB delayed seeking care after onset of concerning symptoms such as vaginal bleeding, abdominal pain, decreased fetal movement, etc.	9 (23%)
Cord Problem	Evidence of cord torsion, nuchal cord, insufficient number of cord vessels, prolapsed cord, cord compression, or other documented problems relating to the umbilical cord	8 (20%)
Prematurity	Infant born at less than 37 weeks gestation	8 (20%)
Late entry to prenatal care	First prenatal visit occurred after 13th week of gestation	7 (18%)
Placental Abruption	A condition in which the placenta separates from the inner wall of the uterus before the baby is born	6 (15%)
Infection/Sepsis	Infant shows clinical evidence or symptoms known to be associated with infection	6 (15%)
Pregnancy-Induced Hypertension (PIH)	Hypertensive states of pregnancy that have not been preceded by any chronic high blood pressure	5 (13%)
Pre-Eclampsia	A pregnancy-specific hypertensive disease with multi-symptom involvement, usually occurring over 20 weeks gestation, and primarily defined by new-onset proteinuria	5 (13%)
Extremely low birth weight	Any newborn, regardless of gestational age, whose weight at birth is less than 750 grams, or 1 lb. 10 oz.	5 (13%)
History of Trauma	MOB reports a history of trauma	5 (13%)

MOB = Mother of Baby, FOB = Father of Baby

A comprehensive list of present factors can be found in Appendix 3.

FIMR RECOMMENDATIONS

Following the review of each case, the FIMR CRT develops specific, actionable recommendations to improve the community's service delivery systems and resources. In 2021, several themes rose to the top and those recommendations are highlighted below. A full list of FIMR's 2021 recommendations can be found in Appendix 4, and are organized according to the six CelebrateOne recommendations published in the CelebrateOne Strategic Plan 2021-2026.

HOME VISITING

Lack of home visiting was noted in 93% of cases reviewed. Franklin County recently explored a rebranding of home visiting services due to the possible negative connotations. The program captures a diverse array of options for moms and families to engage with trained professionals who offer support, services and resources for families and their children – at no cost to the family. Home visiting is a parent support resource with benefits including improvement in birth outcomes such as decreased pre-term births and low-birthweight babies.[8] The CRT believed most cases reviewed would have benefitted from home visiting services and thought this was a missed opportunity. Enrolling more high-risk women in perinatal home visiting services might help women get and stay involved in their prenatal care, improve compliance with their plans of care, increase awareness about birth spacing, and support women in navigating a complex medical system.

FIMR recommendations:

- Encourage pregnant women to enroll in home visiting as an avenue to address social and medical service barriers.
- Refer women with multiple stressors to home visiting, social work, community health worker (CHW), doula services, peer/mentorship, or centering programs.
- Develop phrasing for providers to use with patients to introduce home visiting into discussions of care plans and reframe home visiting in patients' minds.
- Educate providers on the different programs available for home visiting, so they may make patient-specific referrals for resources.
- Continue to rebrand home visiting programs/services to allay families' fears about strangers coming into their home/learning intimate details about their lives.
- Develop an integrated health view of home visiting that includes a team approach where a case manager/home visitor/CHW is working with an OB/GYN and other service providers as a team rather than as a referral option to help pregnant women navigate different systems (e.g., counseling, transportation, childcare).
- Enhance patient understanding of medical information, by providing supplemental supports such as home visiting nurse who speaks the same language.

INADEQUATE ASSESSMENT OF NON-MEDICAL NEEDS

Inadequate assessment of non-medical needs was present in 73% of cases reviewed. This factor can refer to needs like income, employment, insurance, housing, transportation, food, nutrition, and childcare. The lack of assessment for these needs underscores the fact that pregnancy is viewed as only a medical condition. These needs directly descend from the SDOH and as such require equitable attention.

Lack of safe shelter is a common theme with mothers of 78% of cases reviewed living in unsafe neighborhoods. It should be noted that this is not always by self-report of the mom/family, but rather is marked as present if at least one homicide has occurred within a half-mile radius of the address during the pregnancy and life span of the infant. Neighborhood data is gathered from https://communitycrimemap.com/.

Other common themes include lack of adequate transportation or childcare, which can become significant barriers to medical care. Inadequate or unreliable transportation was noted in 18% of cases reviewed and lack of childcare was present in 13% of cases reviewed and voted as a top contributing factor for one case. These mothers may want to attend prenatal care appointments, but with these barriers may not be able to do so.

[8] *National Conference of State Legislatures, Home Visiting: Improving Outcomes for Children* https://www.ncsl.org/research/human-services/home-visiting-improving-outcomes-for-children635399078.aspx. *Accessed 6/17/2022.*

FIMR recommendations:

- Screen women for housing stability at every care visit, regardless of whether previous assessments have been negative.
- Continue to enhance non-emergent medical transportation options for pregnant women and their networks.
- Create or expand resources to provide childcare for overnight emergencies and make respite care available as needed for mothers to seek medical treatment, such as contracting with overnight care facilities or implementing emergency crisis managers and utilizing facilities like hotels.
- Establish resources to support parents experiencing lack of childcare to remove the barrier to medical treatment and to encourage proper prenatal and postpartum care, such as childcare programs or expedited coordination of home visiting nurses.
- Prioritize housing for pregnant and parenting families.
- Standardize prenatal care screenings to include social determinants of health and other non-medical needs, such as childcare.
- Standardize screenings in labor and delivery to include social determinants of health and other non-medical needs, such as medical legal partnership.

LACK OF AND LATE ENTRY TO PRENATAL CARE

Lack of or late entry to prenatal care was a contributing factor in 28% of cases. The Healthy People 2030 goal is that at least 80.5% of pregnant women will receive early and adequate prenatal care. The lack of "early and consistent prenatal care" was present in half of the cases reviewed. Twelve women (30%) entered prenatal care in the second trimester (14-26 weeks), two women (5%) entered prenatal care in the third trimester (27+ weeks), and six women (15%) had no prenatal care at all. Twenty women (50%) entered prenatal care in the first trimester (0-13 weeks). Prenatal care providers who worked in tandem with social workers and mental health professionals were most successful in engaging these high-need women. Their charts noted more assessments of women's non-pregnancy needs and more non-pregnancy related referrals.

Women reported that barriers to prenatal care included transportation problems, lack of insurance, difficulty scheduling appointments, not knowing they were pregnant, feeling ambivalent about being pregnant, and feeling like they were disrespected by providers due to their "zip code," current drug use or the number of previous children they'd had. Of the 40 cases FIMR reviewed, only three pregnancies (7.5%) were known to be intended and 18 (45.0%) were known to be unintended. Data on pregnancy intention was not available for 19 (47.5%) cases. Given that Healthy People 2030 aims to reduce the proportion of unintended pregnancies to 36.5% and that unintended pregnancy is associated with a greater risk of health and social issues for mom and baby, the CRT viewed access to family planning methods and education as a major need among the cases reviewed.

FIMR recommendations:

- Establish resources to support parents experiencing lack of childcare to remove the barrier to medical treatment and to encourage proper prenatal and postpartum care, such as childcare programs or expedited coordination of home visiting nurses.
- Develop a "How To" guide to teach patients when to visit the emergency department/labor and delivery versus an urgent care, primary care physician or prenatal care provider.
- Proactively engage mothers with prior preterm births to assist in establishing prenatal care.
- Continue to advertise StepOne as a resource for getting enrolled in prenatal care by specifically reaching out directly to prenatal care clinics and practices.
- Promote presumptive Medicaid coverage for pregnant women to curb late entry to prenatal care.
- Incorporate screening, referral and connection to social services into the prenatal care process (i.e., "one-stop-shop").

SUBSTANCE USE

Perinatal substance use remains a global public health concern. Although many women quit or reduce substance use once pregnancy is diagnosed, a significant number continue to use throughout their pregnancy contributing to several negative outcomes for both mother and baby. Furthermore, these potential outcomes are compounded by inadequate prenatal care and other complex psychosocial factors. Obstetrical complications include an increased risk of miscarriage, intrauterine growth restriction, premature labor, and even intrauterine fetal demise. However, the risks of substance use disorders extend beyond pregnancy to the newborn. Alcohol is a known teratogen

leading to fetal alcohol spectrum disorder (FASD), which is associated with numerous primary and secondary disabilities. The growing trend of opioid use disorders is particularly alarming due to the associated neonatal withdrawal syndrome, also known as neonatal abstinence syndrome (NAS). Recent estimates identified an increase in the rate of neonatal intensive care unit (NICU) admissions in the United States for NAS from seven cases to 27 cases per 1000 admissions leading to an increase from 0.6% to 4% of all NICU days being attributed to NAS. The long-term effects of alcohol and smoking have been well established, whereas long-term implications of in-utero opioid exposure remain to be determined. Despite numerous interventions, there exists a significant proportion of substance-exposed pregnancies with possible reversible outcomes.[9] There is a focus on the need for the integration of multiple resources for childbearing women with substance use disorders and to link these services into improved systems of care. This suggestion includes primary-to-tertiary prevention efforts for women of childbearing age and their children as a means of reducing the short-term and long-term harm associated with perinatal substance use disorders.

Fifty-five percent of FIMR cases had a positive drug test at least once during pregnancy or at delivery. Fifty percent of cases had a history of tobacco use; 45% currently used tobacco; 50% had a history of illicit drug use; and about 48% currently used illicit drugs, including amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine, fentanyl, and other opiates.

FIMR recommendations:

- Continue to counsel patients on drug (including tobacco, alcohol and illicit substances) and medication use during pregnancy.
- Implement protocol for mothers that test positive for substance use are referred for behavioral health screening.
- Increase support services for pregnant women with a history of/current substance abuse and addiction.
- Encourage all medical and social service providers that interact with pregnant women to use the '5-A's' (i.e., Ask, Advise, Assess, Assist and Arrange) to support tobacco cessation early in pregnancy.
- Enhance supports for women, both during the preconception period and during pregnancy, using tobacco and other drugs by increasing access to non-judgmental cessation education, treatment programs and vigorous follow-up.

HISTORY OF CHRONIC DISEASE

Chronic disease (also called chronic health condition or chronic illness) is a disease that lasts for at least one year that requires ongoing medical care. Chronic conditions can limit daily activities or affect health outcomes including pregnancy. Possible pregnancy complications due to chronic disease include loss of pregnancy, premature birth and congenital anomalies.[10] Pre-pregnancy obesity puts the pregnancy at risk for gestational hypertension, preeclampsia, gestational diabetes, macrosomia, preterm birth or pregnancy loss.[11] During pregnancy, hypertension can cause decreased blood flow to the placenta, placental abruption, intrauterine growth restriction, and premature delivery.[12]

Chronic hypertension is considered high blood pressure pre-pregnancy or diagnosed prior to 20 weeks gestation.[11] Hypertension was present in 18% of cases, with 58% of cases having more than one chronic disease. Mothers with high BMI or who were overweight pre-pregnancy accounted for 73% of cases, with 35% of cases being obese, severely obese, or morbidly obese. A BMI of 25.0 is considered overweight and a BMI of 30.0 or over is considered obese. History of chronic disease other than diabetes, hypertension and high body mass index (BMI) was present in 55% of FIMR cases. These diseases included anemia, asthma, epilepsy, gastroesophageal reflux disease (GERD), hyperthyroidism, hypothyroidism, multiple sclerosis, narcolepsy, and polycystic ovary syndrome (PCOS).

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[9] Ordean A, Graves L, Chisamore B, Greaves L, Dunlop A. Prevalence and Consequences of Perinatal Substance Use-Growing Worldwide Concerns. Subst Abuse. 2017;11:1178221817704692. Published 2017 Jun 6. doi:10.1177/1178221817704692.

[10] March of Dimes, Chronic Health Conditions and Pregnancy. https://www.marchofdimes.org/complications/chronic-health-conditions-and-pregnancy.aspx. Accessed 6/13/2022.

[11] American College of Obstetricians and Gynecologists, https://www.acog.org/womens-health/faqs/obesity-and-pregnancy. Accessed 6/13/2022.

[12] Mayo Clinic, Healthy Lifestyle Pregnancy Week by Week High Blood Pressure and Pregnancy: Know the Facts. https://www.mayoclinic.org/healthy-lifestyle/pregnancy-week-by-week/in-depth/pregnancy/art-20046098#:~:text=High%20blood%20pressure%20during%20pregnancy%20poses%20various%20risks%2C%20including%3A,birth%20weight%20or%20premature%20birth. Accessed 6/17/2022.

FIMR recommendations:

- Encourage pregnant patients to be seen by a primary care physician (PCP) in addition to a prenatal care provider for comprehensive care during pregnancy and to support continuity of care during the postpartum period.
- Ensure the availability of nutrition, diet, exercise and weight gain education/counseling for pregnant women of all BMI classifications during prenatal care and/or pregnancy support visits.
- Establish consistent messaging about the importance of birth spacing for healthy pregnancies, including delaying pregnancy until hypertension is successfully managed.
- Raise and/or allocate funding to provide all pregnant patients with a blood pressure cuff and log with proper education on how to use them to monitor blood pressures.

HISTORY OF ABUSE TO MOM

Reported or documented history of abuse to mom was present in 55% of FIMR cases, with 10% of cases reporting current abuse. Since this factor relies on mothers reporting abuse or it being documented in their medical or social history, it is possible that this statistic is much higher. Abuse comes in many forms: physical, mental, emotional or sexual. The stress of pregnancy can trigger abuse or be compounded by a history of abuse. For a variety of reasons, partners can become abusive during pregnancy and this can have a profound effect on the pregnancy. Abuse can harm a pregnancy up to and including pregnancy loss.[13]

FIMR recommendations:

- Screen all women for domestic violence at every care visit, regardless of whether previous assessments have been negative.
- Incorporate intimate partner violence screening into other screening processes performed in health care settings, ensuring privacy from partners and/or family members during the assessment, and provide direct referrals to relevant services and resources, as needed.
- Refer mothers with concerning injuries to domestic violence advocate resources.
- Develop inconspicuous referral materials for abuse such as small referral cards to lessen the possibility of the abuser discovering and retaliating against the mother.

MENTAL HEALTH

History of mental health issues was present in 48% of FIMR cases, while 38% of cases had mental illness during pregnancy and 48% of cases experienced mental health issues during the postpartum period. Not surprisingly, the trauma of pregnancy or infant loss increases the likelihood of suffering from mental health issues. According to POEM (Perinatal Outreach and Encouragement for Moms), Pregnancy and Postpartum Depression (PPD) is the number one complication of childbirth, affecting nearly one million women in the U.S. each year. Symptoms include a wide range of emotional and physiological reactions that can occur during pregnancy and/or postpartum. While the causes and symptoms of PPD are different for every woman, there are certain factors that increase a woman's chances of developing PPD, including: history of PPD or other mental illness; being a first-time mom; ambivalence about the pregnancy; lack of social support; lack of a stable relationship with partner and/or parents; dissatisfaction with yourself; infertility; unrealistic expectations of parenthood; recent stresses; prior adverse reaction to contraceptives or severe PMS; and being either a young or an older mom.[14]

FIMR recommendations:

- Complete mental health screenings early and regularly during pregnancy and prioritize pregnant women for mental health services as needed.
- Refer pregnant women for mental health assessment and treatment as needed, including prior to hospital delivery discharge.
- Enhance coordination of mental health, addiction and trauma services to improve programs' referral utilization rates.

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[13] March of Dimes, Abuse During Pregnancy. https://www.marchofdimes.org/pregnancy/abuse-during-pregnancy.aspx. Accessed 6/13/2022.
[14] Mental Health America of Ohio, About Pregnancy and Postpartum Depression (PPD). https://mhaohio.org/get-help/maternal-mental-health/about-ppd/. Accessed 5/27/2022.

LACK OF TIMELY MEDICAL CARE

Lack of timely medical care was present in about 43% of cases reviewed. Often times, the delay in care was noted to be related to other circumstances such as history of trauma, mental health issues, stigma associated with substance use disorder, transportation issues, lack of childcare, inability to get time off from work, etc. One very concerning pregnancy-related symptom is a decrease in fetal movement, but some cases reported feeling unsure that decreased movement was a problem, while some women didn't typically monitor fetal movement.

FIMR recommendations:

- Develop a "How To" guide to teach patients when to visit the emergency department/labor and delivery versus an urgent care, primary care physician or prenatal care provider.
- Standardize fetal "kick-count"/baby movement education so that women know how and when to contact their providers if they suspect decreased fetal movement.
- Promote fetal "kick-count"/baby movement education.

HISTORY OF TRAUMA

History of trauma was noted in 30% of FIMR cases reviewed. Trauma can have long–lasting negative effects on physical and mental health. Exposure to abuse, neglect, discrimination, violence, and other adverse experiences increase a person's lifelong potential for serious health problems and engaging in health-risk behaviors. Trauma-informed care can be used by practitioners to better treat their patients. Past trauma and stigma go hand in hand. Stigma is giving someone an undesirable label based on negative social perceptions. The potential ill-effects of stigma include social isolation, poor quality of life, less access to healthcare, delayed diagnoses, reduced adherence to treatments, illness and possibly even death. Stigma often keeps people from seeking care. Women with substance use disorders, infectious diseases, mental health conditions, or other health conditions can often feel judged and blamed by family, friends and healthcare providers, which can keep them from getting the care they need.[15] Reducing health-related stigma can go a long way towards ensuring moms and babies get the support and care they need.

FIMR recommendations:

- Assess all women for a history of trauma at all points of care.
- Ensure that trauma-informed counseling services are available to all pregnant women and families.
- Increase trauma-informed care training in nursing and medical schools, schools of public health and social work, and continuing education opportunities to ensure that all health providers understand the impact of trauma on individuals and can provide appropriate care to pregnant and parenting families.
- Enhance coordination of mental health, addiction and trauma services to improve programs' referral utilization rates.
- Encourage post traumatic growth education for fathers.
- Offer grief supports that address a family's current loss as well as past history of trauma/loss. .

[15] *March of Dimes, Beyond Labels. https://beyondlabels.marchofdimes.org/. Accessed 5/23/2022.*

WHAT IS THE FRANKLIN COUNTY COMMUNITY DOING ABOUT FETAL-INFANT MORTALITY?

In 2021, the FIMR CRT met monthly and developed a set of recommendations to improve birth outcomes in Franklin County. There is a strong match between the new recommendations and CelebrateOne's new strategic plan, released in July of 2021. While CelebrateOne and its Lead Entities, which help implement the plan, are launching a number of new initiatives throughout 2022, the CelebrateOne Lead Entities have been proactive and have already started to incorporate these recommendations into their work and programming throughout the year. Based on the CelebrateOne recommendations, the following changes were made:

CELEBRATEONE RECOMMENDATION #1: TARGET AND ADDRESS STRUCTURAL AND INTERPERSONAL RACISM AS FUNDAMENTAL DRIVERS OF INFANT MORTALITY.

- CelebrateOne hosted the Groundwater Anti-Racism training for all of its lead entities to prepare for enhanced effort and focus on race and health equity in the future work of the initiative.
- In addition to the groundwater anti-racism training hosted by CelebrateOne, Moms2B and its team members completed the ODH implicit bias training.
- Lower Lights Christian Health Center (LLCHC) has a Diversity & Inclusion Work Plan and Committee that executes training which addresses topics such as implicit bias, cultural competency and the impacts of systemic racism.

CELEBRATEONE RECOMMENDATION #2: ADDRESS THE SOCIAL DETERMINANTS OF HEALTH ACROSS THE LIFE COURSE TO ADVANCE MATERNAL CHILD HEALTH.

- The Department of Development, Housing Division (DOD) worked to prioritize the lowest cost housing for those who are homeless, including families. Additionally, DOD is asking developers to consider providing housing to pregnant women.
- Social workers and nurses at LLCHC screened for social determinants of health, referred women to resources as needed, and advertised the availability of WIC services. LLCHC also provided Lyft rides to appointments to help enhance transportation options.
- Moms2B collaborated with organizations that help provide housing and resources for pregnant and parenting families. Moms2B also provided childcare options for medical appointments and labor/delivery, which helped to support parents experiencing lack of childcare and removed a barrier to medical treatment and prenatal/postpartum care. Families were also screened for housing stability during Moms2B sessions.
- Ohio Better Birth Outcomes (OBBO) Collaborative oversaw Medical-Legal Partnership, which bolstered the use of legal aid to assist with patient care.
- CelebrateOne Connectors and Navigators screened clients for housing stability and referred them to services as needed. CelebrateOne also worked to prioritize housing for pregnant and parenting families through the launch of the Housing for Pregnant Women program, which provided pregnant women experiencing housing instability with alternative solutions to staying in shelters of living on the land.

CELEBRATEONE RECOMMENDATION #3: ADVANCE POLICIES THAT PREVENT POOR BIRTH OUTCOMES AND PROMOTE WOMEN'S HEALTH AND WELLBEING RIGHTS.

- CelebrateOne promoted FIMR recommendations for improvement by ensuring the FIMR team at CPH is able to present their program data and recommendations each month during Lead Entities meetings. This allowed FIMR recommendations to be shared with a number of community organizations, including public prenatal care providers.
- CelebrateOne promoted expansion of Medicaid coverage for pregnant women. The Ohio legislature authorized the expansion of Medicaid coverage for pregnant women from 60 days to one year postpartum.

CELEBRATEONE RECOMMENDATION #4: IMPROVE PROVISION OF REPRODUCTIVE HEALTH CARE FROM PRECONCEPTION THROUGH ONE YEAR OF AGE.

- Columbus Public Health (CPH) developed phrasing for providers to use with patients to introduce home visiting into discussions of care plans. This also helped reframe home visiting in patients' minds, encouraging more patients to enroll in home visiting services. CPH staff met with CelebrateOne Community Connectors to coach them on how to use family-friendly language when providing home visiting referrals. Providers were also educated on the different programs available for home visiting so they could make patient specific referrals for related resources. Additionally, CPH met with various community agencies, including Thrive to Five and Centering Pregnancy to provide education on CPH home visiting services.
- Central Ohio Hospital Council (COHC) and LLCHC achieved this recommendation by advocating for an interpreter to be present whenever necessary during patient visits.
- LLCHC also incorporated early screenings for trauma, mental health concerns, human trafficking, and domestic violence for women at all points of care. If needed, direct referrals to relevant services and resources were then provided. Fetal "kick-count"/baby movement education was also promoted, along with education about healthy spacing between pregnancies, nutrition, breastfeeding, and exercise. LLCHC provided patients with blood pressure cuffs, so there was no need for them to consult their HMO to receive cuffs.
- As a multidisciplinary team, Moms2B developed projects to increase attendance at postpartum visits by setting patients up during their pregnancies. Moms2B worked with Momipods at OSU to help with dyad care and promotion of continued care, especially in mothers with diabetes and hypertension. Additionally, they completed screenings to assess for postpartum depression and had a weekly Zoom session dedicated to emotional wellness with referrals to women's' behavioral health as needed. Moms2B also taught participants safe spacing, contraception options and fetal kick counts, and assessed women for a history of trauma.
- CelebrateOne Connectors and Navigators screened clients for a history of trauma, tobacco and/or substance use and mental health concerns, and referred them to treatment as needed. CelebrateOne also prioritized hiring culturally diverse staff to encourage client comfort and cultural sensitivity, particularly in Somali, Ethiopian and Hispanic communities.

CELEBRATEONE RECOMMENDATION #5: DESIGN AND IMPLEMENT A CONNECTED AND CONSISTENT CARE EXPERIENCE FOR MOTHERS AND BABIES.

- COHC continued to advertise StepOne as a resource for getting enrolled in prenatal care.
- CPH engaged in community events to provide service information directly to consumers. CPH home visiting continued to hire home visitors (multi-disciplinary teams of nurses, social workers and outreach workers) that reflected the diverse populations served, including bilingual staff. The home visiting program also promoted Fatherhood Fundamental services at community events and encouraged partner participation in home visits. The Fatherhood Family Field Day was the largest promotion event in 2021, drawing over 200 people.
- The Tobacco team at CPH provided smoking cessation education and presentation materials directed towards dads in the Father 2 Father's group at Columbus Urban League. Media advertisements addressing cessation programs for pregnant women were also used.
- LLCHC worked to establish a protocol for telephone or in-person follow-up by support services (case manager/CHW) to address gaps in care for pregnant women. Staff also encouraged pregnant women on Medicaid to complete the Healthchek form to facilitate linkage with services, which was part of a wraparound support model to coordinate care between providers to improve referral utilization rates.
- Through the Dads2B program, Moms2B served fathers and provided parenting education and support to encourage engagement of fathers. Families were also encouraged to enroll in home visiting and doula services were promoted as avenues to help address social and medical service barriers. Case management services were provided to link pregnant women to community services and to help them navigate different systems.
- CelebrateOne continued to advertise StepOne as a resource for enrolling in prenatal care. Connectors promoted the availability of doula services and assessed each client's interest in being connected with a doula. Additionally, clients were connected to home visiting services, centering programs, Moms2B, and domestic violence advocate services as needed. Expecting and parenting fathers were among those served by Connectors and referred to appropriate resources, including education, father-to-father mentorship and wraparound services.

OTHER FIMR RECOMMENDATIONS:

- CPH home visiting provided information on establishing paternity and educated fathers that without marriage, they cannot make decisions for unborn children in the case that the mother is unable to make them.
- LLCHC offered grief supports that addressed a family's past and/or current loss. They also developed a system to track COVID-19 positive cases and encouraged COVID-19 vaccination during pregnancy or before pregnancy for women of childbearing age.
- Moms2B created a FAQ sheet regarding the COVID-19 vaccine and promoted vaccination throughout the year. It was also available at the Community Care Coach which went to the north site twice a month.
- CelebrateOne Connectors and Navigators provided clients with education on the COVID-19 vaccine during the intake process and tracked his/her vaccination status and interest in receiving a COVID-19 vaccine.

MOVING FORWARD

CPH remains committed to reviewing fetal and infant deaths and is grateful for the continued partnership and engagement from members of the CRT and CAT. In 2022, CPH streamlined its death review programs by combining the Child Fatality Reviews and Fetal-Infant Mortality Review under one program coordinator. A social worker has also been hired to strengthen outreach in the hope of securing more maternal/family interviews as this is what sets FIMR apart from other death reviews. The Cross-Divisional Reducing Infant Mortality (RIM) Committee has been revitalized which will serve as an internal CAT.

Consider this a call to action to implement the enclosed recommendations to continue to improve the health of babies and families in Franklin County.

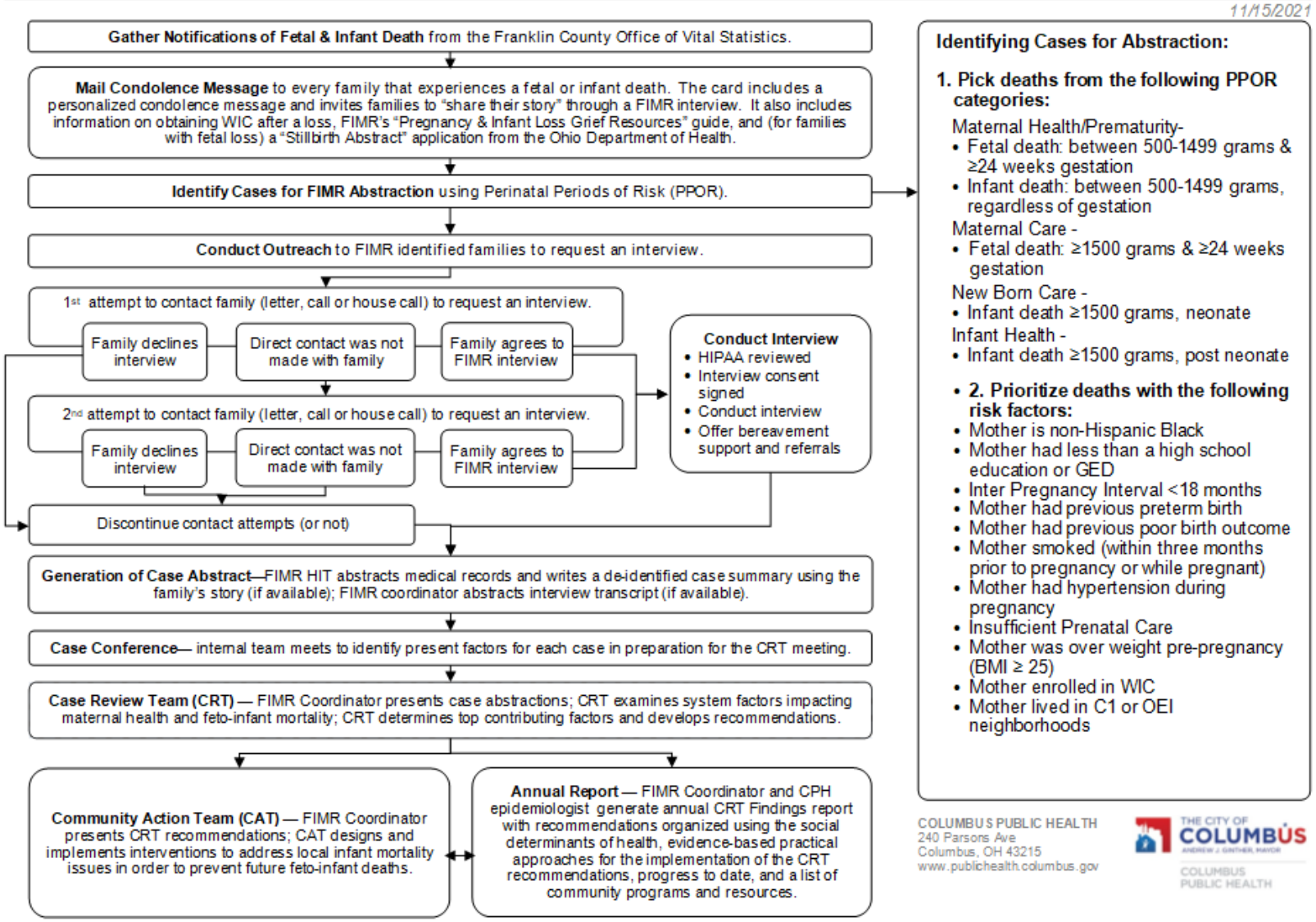
ORGANIZATIONS PARTICIPATING IN FIMR CRT IN 2021

CelebrateOne
Central Ohio Pathways Hub, Health Impact Ohio
Columbus Public Health
Columbus Urban League
Franklin County Children Services
Franklin County Department of Jobs and Family Services
Franklin County Public Health
Legal Aid Society of Columbus
Mental Health America of Franklin County
Nationwide Children's Hospital
OhioHealth
Perinatal Outreach & Encouragement for Moms (POEM)
The Center for Family Safety and Healing

Appendix 2: FIMR Process Flowchart

FETAL-INFANT MORTALITY REVIEW (FIMR) PROGRAM

CASE REVIEW TEAM (CRT) FINDINGS: 2021, APPENDIX — FIMR PROCESS



Appendix 3: FIMR Present Factors

Each of these variables is from the detailed list of present and contributing factor codes adapted from NFIMR's "Present & Contributing Variables" document. Numbers represent the cases in which the factor was present. Note: some variables may be underreported due to missing information in available records.

1. PRECONCEPTION / INTERCONCEPTION CARE

20.0%	8	Preconception Care
62.5%	25	Postpartum Visit Kept
60.0%	24	Pregnancy Planning/Birth Control Education
15.0%	6	Dental/Oral Care
35.0%	14	Chronic Disease Control Education
22.5%	9	Weight Management/Dietician
20.0%	8	Bereavement Referral

2. MEDICAL: MOTHER

2.5%	1	Early Teen Pregnancy (17 years and under at conception)
7.5%	3	Late Teen Pregnancy (18 & 19 years at conception)
30.0%	12	Pregnancy > 35 years
35.0%	14	Cord Problem
17.5%	7	Placental Abruption
2.5%	1	Placenta Previa
20.0%	8	Chorioamnionitis
0.0%	0	Pre-existing Diabetes
12.5%	5	Gestational Diabetes
7.5%	3	Cervical Insufficiency
20.0%	8	Previous Abnormal PAP
17.5%	7	Infection: Bacterial Vaginosis
15.0%	6	Infection: Group B Strep
30.0%	12	Infection: Urinary Tract Infection
40.0%	16	Infection: STI
17.5%	7	Infection: Other
5.0%	2	Multiple Gestation
80.0%	32	Mother's Weight Pre-Pregnancy: BMI (Average BMI 30.3)
17.5%	7	Insufficient/Excess Weight Gain
10.0%	4	Poor Nutrition
17.5%	7	Pre-Existing Hypertension
17.5%	7	Pregnancy Induced Hypertension
27.5%	11	Pre-Eclampsia
0.0%	0	Eclampsia
17.5%	7	Pre-Term Labor
30.0%	12	Pregnancy < 18 months Apart
0.0%	0	PROM
15.0%	6	PPROM
7.5%	3	Prolonged Rupture of Membrane
7.5%	3	Pre-Existing Dental/Oral Issues
27.5%	11	Oligohydramnios / Polyhydramnios
30.0%	12	Previous Spontaneous Abortions or Miscarriages
25.0%	10	Previous Therapeutic/Voluntary Abortions
12.5%	5	Previous Fetal or Infant Loss
25.0%	10	Previous Low Birth Weight Delivery
17.5%	7	Previous Pre-Term Delivery
7.5%	3	VBAC This Pregnancy
25.0%	10	Previous C-section
42.5%	17	C-Section This Pregnancy
5.0%	2	Previous Ectopic Pregnancy
10.0%	4	First Pregnancy <18 years old
15.0%	6	≥4 Live Births
2.5%	1	Assisted Reproductive Technology

3. FAMILY PLANNING

12.5%	5	Intended Pregnancy
42.5%	17	Unintended Pregnancy
7.5%	3	Unwanted Pregnancy
40.0%	16	No Birth Control
7.5%	3	Failed Contraceptive
0.0%	0	Lack of Knowledge: Methods
2.5%	1	Lack of Resources

4. SUBSTANCE USE

55.0%	22	Maternal Positive Drug Test
100.0%	40	Maternal Drug Test
50.0%	20	Tobacco Use: History
45.0%	18	Tobacco Use: Current
27.5%	11	Alcohol Use: History
10.0%	4	Alcohol Use: Current
47.5%	19	Illicit Drug Use: Current
50.0%	20	Illicit Drug Use: History
10.0%	4	Use of Unprescribed Meds
2.5%	1	Over The Counter Drug/Prescription

5. PRENATAL CARE / DELIVERY

12.5%	5	Standard of Care Not Met
0.0%	0	Inadequate Assessment
15.0%	6	No Prenatal Care
35.0%	14	Late Entry to Prenatal Care
2.5%	1	Lack of Progesterone Therapy
2.5%	1	Lack of Referrals
15.0%	6	Missed Appointments
25.0%	10	Multiple Providers/Sites
75.0%	30	Lack of Dental Assessment
7.5%	3	Lack of Dental Care
10.0%	4	Inappropriate Use of ER

6. MEDICAL: FETAL / INFANT

5.0%	2	Non-Viable Fetus
22.5%	9	Low Birth Weight <2500 grams
27.5%	11	Very Low Birth Weight <1500 grams
27.5%	11	Extremely Low Birth Weight <750 grams
12.5%	5	Intrauterine Growth Restriction
35.0%	14	Congenital Anomaly
30.0%	12	Prematurity
17.5%	7	Infection/Sepsis
0.0%	0	Failure to Thrive
0.0%	0	Birth Injury
0.0%	0	Feeding Problem
17.5%	7	Respiratory Distress Syndrome
0.0%	0	Developmental Delay
0.0%	0	Inappropriate Level of Care
10.0%	4	Positive Drug Test (decedent)

7. PEDIATRIC CARE

2.5%	1	Standard of Care Not Met
2.5%	1	Inadequate Assessment
0.0%	0	No Pediatric Care
0.0%	0	Lack of Referrals
0.0%	0	Missed Appointments/Immunizations

0.0%	0	Multiple Providers/Sites
0.0%	0	Inappropriate Use of ER

8. ENVIRONMENT

77.5%	31	Unsafe Neighborhood
10.0%	4	Substandard Housing
5.0%	2	Overcrowding
2.5%	1	Second-Hand Smoke
12.5%	5	Little/No Breastfeeding
0.0%	0	Improper Formula Prep/Feeding
0.0%	0	Improper or No Car Seat Use
0.0%	0	Unsafe Sleep Location
0.0%	0	Objects in Sleep Environment
0.0%	0	Infant Overheating
0.0%	0	Not Back Sleep Positioning
0.0%	0	Apnea Monitor Misuse
0.0%	0	Lack of Adult Supervision

9. INJURIES

0.0%	0	Suffocation/ Strangulation
0.0%	0	Abusive Head Trauma
15.0%	6	General Trauma

10. SOCIAL ENVIRONMENT

10.0%	4	Lack of Family Support
2.5%	1	Lack of Neighbors/Community Support
15.0%	6	Lack of Partner/FOB Support
20.0%	8	Single Parent
5.0%	2	Living Alone
35.0%	14	<12th Grade Education
0.0%	0	Special Education
0.0%	0	Physical or Cognitive Disability

11. PARTNER/FOB/CAREGIVERS

50.0%	20	Employed
5.0%	2	History of Mental Illness
12.5%	5	Substance or Tobacco Use/Abuse: Current
37.5%	15	Substance or Tobacco Use/Abuse: History

12. FAMILY TRANSITION

30.0%	12	Frequent/Recent Moves
2.5%	1	Living in a Shelter/Homeless
0.0%	0	Concerns Regarding Citizenship
15.0%	6	Divorce/Separation
5.0%	2	Multiple Partners
0.0%	0	MOB: Prison/Parole/Probation
5.0%	2	FOB: Prison/Parole/Probation
15.0%	6	Major Ilness/Death in Family

13. MATERNAL MENTAL HEALTH/STRESS

47.5%	19	History of Mental Illness
37.5%	15	Depression/Mental Illness During Pregnancy
47.5%	19	Depression/Mental Illness in PP Period
25.0%	10	Multiple Stresses
2.5%	1	Social Chaos
60.0%	24	MOB Employed: Yes
17.5%	7	Concern About Enough Money
15.0%	6	Work/Employment Problems
7.5%	3	Child/Children with Special Needs
2.5%	1	Problems with Family/Relatives
10.0%	4	Lack of Grief Support

14. FAMILY VIOLENCE/NEGLECT

55.0%	22	History of Abuse to MOB
10.0%	4	Current Abuse to MOB
15.0%	6	History of Abuse to FOB
0.0%	0	Current Abuse to FOB
5.0%	2	History of Abuse — This Infant
47.5%	19	History of Abuse — Other Child
0.0%	0	Current Child Neglect — This Infant
10.0%	4	Current Child Neglect — Other Child
22.5%	9	History of Child Neglect — Other Child
72.5%	29	CPS Referrals
42.5%	17	Police Reports (At Any Time)

15. CULTURE

15.0%	6	Language Barriers
17.5%	7	Beliefs Regarding Pregnancy/Health

16. PAYMENT FOR CARE

20.0%	8	Private
2.5%	1	Medicare
47.5%	19	Medicaid
7.5%	3	Self-Pay/Medically Indigent

17. SERVICES PROVIDED

5.0%	2	Inadequate Information
45.0%	18	WIC
5.0%	2	Mother/Child Not Eligible
92.5%	37	Lack of Home Visiting
0.0%	0	Poor Provider to Provider Communications
12.5%	5	Poor Provider to Patient Communication
12.5%	5	Client Dissatisfaction
2.5%	1	Dissatisfaction with Support Services
12.5%	5	Lack of Child Care

18. TRANSPORTATION

0.0%	0	No Public Transportation
17.5%	7	Inadequate/Unreliable Transportation

19. DOCUMENTATION

60.0%	24	Inconsistent Unclear Information
0.0%	0	Inconsistent Vital Records Data
32.5%	13	Missing Data
0.0%	0	No Death Scene Investigation
0.0%	0	No Doll Reenactment

20. ADDED VARIABLES

0.0%	0	History of homeless as a child
42.5%	17	History of neglect as a child
15.0%	6	Declined/not engaged in mental health services
72.5%	29	Inadequate assessment of "non-medical" needs
7.5%	3	No placental pathology
0.0%	0	Lack of referral for supports for known lethal condition
0.0%	0	Inflexible/ineffective prenatal education
30.0%	12	History of trauma
7.5%	3	Declined social services:
0.0%	0	Delivery outside hospital
80.0%	32	No autopsy
55.0%	22	History of other chronic disease
5.0%	2	MOB tried (but unable) to follow medical advice
17.5%	7	No domestic violence screening
42.5%	17	MOB did not seek timely medical care
5.0%	2	Cultural barriers
7.5%	3	Possible un-dx mental illness
57.5%	23	No PPBC
0.0%	0	Impact of racism

7.5%	3	Poor relations or communication b/t pt. & provider(s)
2.5%	1	Inadequate coordination of care
32.5%	13	Declined recommended course of care
15.0%	6	History of pre-eclampsia
2.5%	1	Abnormal uterine cavity
2.5%	1	History of gestational diabetes

All cases are out of 40 (i.e., the full sample)

MAKING THE MOST OF FIMR RECOMMENDATIONS

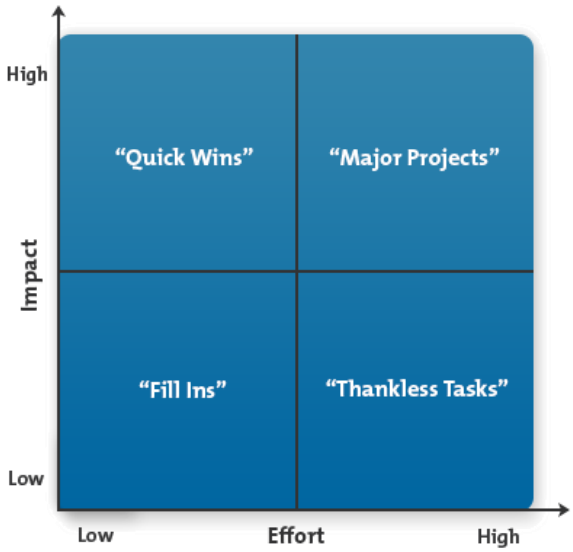
The FIMR Case Review Team (CRT) collectively developed a multitude of recommendations to improve fetal-infant health outcomes in our community. By strategically choosing the ones to be presented to the Community Action Team (CAT; i.e., CelebrateOne Lead Entities), the probability that the time, effort and resources needed to implement the suggested strategies is improved.

Using an "Action Priority Matrix" (Figure 1) – otherwise referred to as an “Impact/Feasibility Matrix” – the FIMR CRT and CAT prioritized its list of recommendations based on their potential to improve maternal, fetal, infant and community health, along with the time, effort and resources it would take to implement them. The teams ranked a vast majority of the recommendations made in 2021 as either “Quick Wins” or “Major Projects,” indicating that most recommendations were thought to have high impact regardless of effort.

ABOUT THE TOOL

An Action Priority Matrix (Figure 1) shows us how FIMR’s recommendations can be prioritized for action. This is especially useful because organizations rarely have the time, staff or funding to implement *all* of the changes proposed in our lengthy list of recommendations. When the matrix is used to choose specific strategies intelligently, it can facilitate positive forward momentum in fetal-infant mortality reduction efforts.

Figure 1: The Action Priority Matrix



Recommendations are scored first on their impact and then on the effort needed to implement them *(i.e., 0=none, 1=low, 2=moderate, 3=high)*. Scores are then used to plot these activities in one of four of the following quadrants:

Quick Wins *(High Impact, Low Effort)*: These give a good return for relatively little effort. The CAT should focus on these as much as they can.

Major Projects *(High Impact, High Effort)*: These give good returns, but are time-consuming. This means that one major project can "crowd out" many quick wins.

Fill-Ins *(Low Impact, Low Effort)*: These recommendations may be implemented given spare resources, but those in the first two quadrants should be prioritized.

Thankless Tasks *(Low Impact, High Effort)*: These should try to be avoided. Not only do they give little return, they also use resources that should be devoted elsewhere.

FETAL-INFANT MORTALITY REVIEW (FIMR) PROGRAM

CASE REVIEW TEAM (CRT) RECOMMENDATIONS: 2021

NOTE: Some recommendations were posed multiple times throughout the 2021 review year by FIMR CRT members; these recommendations are denoted with a red diamond (♦). Recommendations recurring from previous years are denoted with two red diamonds (♦♦). Recommendations both recurring from previous years and in the 2021 review year are denoted with three red diamonds (♦♦♦).

CELEBRATEONE RECOMMENDATION #1: TARGET AND ADDRESS STRUCTURAL AND INTERPERSONAL RACISM AS FUNDAMENTAL DRIVERS OF INFANT MORTALITY.

MAJOR PROJECTS *(High Impact, High Effort)*

- Require hospitals, pharmacies, prenatal care providers and social service agencies to complete health equity and diversity training that addresses implicit bias, cultural competency (including ways to work with women/families who may have religious convictions that affect how they seek and respond to care), and the impacts of systemic racism. ♦♦

CELEBRATEONE RECOMMENDATION #2: ADDRESS THE SOCIAL DETERMINANTS OF HEALTH ACROSS THE LIFE COURSE TO ADVANCE MATERNAL CHILD HEALTH.

QUICK WINS *(High Impact, Low Effort)*

- Screen women for housing stability at every care visit, regardless of whether previous assessments have been negative. ♦♦
- Standardize prenatal care screenings to include social determinants of health and other non-medical needs such as childcare. ♦♦
- Standardize screenings in labor and delivery to include social determinants of health and other non-medical needs such as medical legal partnership. ♦♦
- Advertise the availability of WIC services in the case of fetal demise.
- Bolster use of legal aid to assist with patient care such as advocating for Medicaid approvals.

MAJOR PROJECTS *(High Impact, High Effort)*

- Continue to enhance non-emergent medical transportation options for pregnant women and their networks. ♦♦
- Create or expand resources to provide childcare for overnight emergencies and make respite care available as needed for mothers to seek medical treatment, such as contracting with overnight care facilities or implementing emergency crisis managers and utilizing facilities like hotels. ♦
- Establish resources to support parents experiencing lack of childcare to remove the barrier to medical treatment and to encourage proper prenatal and postpartum care, such as childcare programs or expedited coordination of home visiting nurses. ♦
- Prioritize housing for pregnant and parenting families.

CELEBRATEONE RECOMMENDATION #3: ADVANCE POLICIES THAT PREVENT POOR BIRTH OUTCOMES AND PROMOTE WOMEN'S HEALTH AND WELLBEING RIGHTS.

QUICK WINS *(High Impact, Low Effort)*

- Direct advertisement of FIMR recommendations for improvement to public and private prenatal care providers. ♦

MAJOR PROJECTS *(High Impact, High Effort)*

- Advocate for termination of pregnancy to be mother's choice, with the consultation of a clinician regardless of term, rather than a legal issue at the state level. ♦

CELEBRATEONE RECOMMENDATION #4: IMPROVE PROVISION OF REPRODUCTIVE HEALTH CARE FROM PRECONCEPTION THROUGH ONE YEAR OF AGE.

QUICK WINS *(High Impact, Low Effort)*

- Advocate for a translator to be present whenever necessary.
- Assess all women for a history of trauma at all points of care. ♦♦♦
- Complete mental health screenings early and regularly during pregnancy and prioritize pregnant women for mental health services as needed. ♦♦♦
- Encourage and assist pregnant patients to be seen by a primary care physician (PCP) in addition to a prenatal care provider for comprehensive care during pregnancy and to support continuity of care during the postpartum period. ♦♦♦
- Incorporate human trafficking screening into other screening processes performed in health care settings, ensuring privacy from partners and/or family members during the assessment, and provide direct referrals to relevant services and resources, as needed. ♦♦♦

- Screen all women for domestic violence at every care visit, regardless of whether previous assessments have been negative. ♦♦♦
- Standardize fetal "kick-count"/baby movement education so that women know how and when to contact their providers if they suspect decreased fetal movement. ♦♦♦
- Refer pregnant women for mental health assessment and treatment as needed, including prior to hospital delivery discharge. ♦♦♦
- Continue to counsel patients on drug (including tobacco, alcohol and illicit substances) and medication use during pregnancy. ♦♦
- Ensure the availability of nutrition, diet, exercise and weight gain education/counseling for pregnant women of all BMI classifications during prenatal care and/or pregnancy support visits. ♦♦
- Establish consistent messaging about the importance of birth spacing for healthy pregnancies, including delaying pregnancy until hypertension is successfully managed. ♦♦
- Promote fetal "kick-count"/baby movement education. ♦♦
- Develop phrasing for providers to use with patients to introduce home visiting into discussions of care plan and reframe home visiting in patients' minds.
- Discuss barriers to healthy pregnancies when using One Key Question® framework; educate and support patients in their decisions.
- Educate providers on the different programs available for home visiting so they may make patient specific referrals for resources.
- Enhance education related to gestational hypertension for patients during the prenatal period.
- Enhance education related to subsequent pregnancies following a loss and the risks to MOB's physical and mental health, especially in cases of narrow birth spacing.
- Enhance patient understanding by encouraging medical staff to use clear concise language when discussing a patient's diagnosis, progress and prognosis.
- Ensure nutrition monitoring in pregnant women with documented nausea.
- Implement early evaluation of cervical length without history of preterm birth or fetal or infant loss.
- Implement routine, consistent and focused mental health screenings for subsequent pregnancies following losses.
- Include universal Edinburg Postnatal Depression Scale screening as standard of care.
- Incorporate intimate partner violence screening into other screening processes performed in health care settings, ensuring privacy from partners and/or family members during the assessment, and provide direct referrals to relevant services and resources, as needed.
- Prioritize patient care to include breastfeeding education and strengthen supports.
- Promote pre- and inter-conception counseling to recommend an aspirin regimen for mothers with a history of gestational hypertension and preeclampsia.
- Provide postpartum depression education in multiple formats to increase accessibility to all audiences.
- Refer mothers to a nutritionist for management of gestational diabetes and hypertension.
- Refer to tobacco cessation programs, like Baby & Me Tobacco Free, when MOB is smoking while pregnant.
- Refer women with a history of losses to mental health services during subsequent pregnancies.
- Test all women of childbearing age for pregnancy prior to radiological imaging.
- Test for gestational diabetes early in mothers with a history of such.
- Use One Key Question® framework in discussions of difficulty getting pregnant.

MAJOR PROJECTS *(High Impact, High Effort)*

- Ensure that trauma-informed counseling services are available to all pregnant women and families. ♦♦♦
- Establish "one-stop-shop" organizations that allow pregnant women to receive clinical and social services all in one place. ♦♦♦
- Increase trauma-informed care training in nursing and medical schools, schools of public health and social work, and continuing education opportunities to ensure that all health providers understand the impact of trauma on individuals and can provide appropriate care to pregnant and parenting families. ♦♦♦
- Develop a "How To" guide to teach patients when to visit the emergency department/labor and delivery versus an urgent care, primary care physician or prenatal care provider. ♦♦
- Develop or invest in a Shared Health Record (SHR) system to facilitate the sharing of information with social service agencies. ♦♦
- Continue to establish and promote One Key Question® in all medical settings (including internal medicine and pediatrics), social service agencies, and anywhere men and women of reproductive age may receive services, especially for women with chronic conditions. ♦♦
- Improve communication between patients and providers to ensure that patients feel heard; encourage providers to use a teach-back method to ensure patient understanding and repeat prenatal teachings throughout pregnancy. ♦♦
- Prioritize prenatal education based on patient needs instead of overloading them with too much information at once; reinforce messages with a team of providers, including social workers, home visitors, CHWs, etc. ♦♦
- Clinicians placing more emphasis on postpartum care for long term management of MOB's health. ♦
- Prioritization of ensuring culturally diverse staff to encourage patient comfort and improve patient outcomes. ♦
- Raise and/or allocate funding to provide all pregnant patients with a blood pressure cuff and log with proper education on how to use them to monitor blood pressures. ♦

- Clinicians reassess algorithms used for racial bias that do not account for real differences in biology.
- Complete genetics testing early (as early as 10 weeks) for mothers with a history of cervical incompetence.
- Develop and promote education on Long-Acting Reversible Contraception (LARC) for mothers with short interpregnancy intervals.
- Encourage patients to consult their HMO about blood pressure cuff coverage.
- Ensure that birth control methods, particularly Long-Acting Reversible Contraception (LARC), are widely accessible and that women have autonomy over their method of choice.
- Establish and promote comprehensive mental health assessments, care coordination and ongoing support services to curb underassessment and under-treatment of mental illness.
- Establish and promote Reproductive Life Plan protocol to encourage both women and men to reflect on their reproductive intentions and to find strategies for successful family planning.
- Establish consistent messaging about the importance of birth spacing for healthy pregnancies, and ensure that women receive a desired birth control method prior to hospital discharge after delivery, particularly for mothers with short interpregnancy intervals.
- Establish Spanish speaking members of medical teams, including community health workers.
- Healthcare providers focus on patient/family relationship to manage expectations.
- Implement protocol for mothers that test positive for substance use are referred for behavioral health screening.
- Perform cerclage early on mothers with a history of cervical incompetence.
- Proactively engage mothers with prior preterm births to assist in establishing prenatal care.
- Promote preconception health counseling, including delaying pregnancy until hypertension is successfully managed.
- Standardize mental health screening tools across healthcare.
- Tailor patient care and education to specific patient needs.

FILL-INS *(Low Impact, Low Effort)*
- Encourage patients to consult their HMO about blood pressure cuff coverage.

CELEBRATEONE RECOMMENDATION #5: DESIGN AND IMPLEMENT A CONNECTED AND CONSISTENT CARE EXPERIENCE FOR MOTHERS AND BABIES.

QUICK WINS *(High Impact, Low Effort)*
- Continue to advertise StepOne as a resource for getting enrolled in prenatal care, by specifically reaching out directly to prenatal care clinics and practices. ♦♦♦
- Encourage pregnant women to enroll in home visiting as an avenue to address social and medical service barriers. ♦♦♦
- Promote the availability of doula services and the many applications they have. ♦♦♦
- Refer women with multiple stressors to home visiting, social work, CHW, doula services, peer/mentorship, or centering programs. ♦♦♦
- Encourage all medical and social service providers that interact with pregnant women to use the '5-A's' (i.e., Ask, Advise, Assess, Assist and Arrange) to support tobacco cessation early in pregnancy. ♦♦
- Establish a protocol for telephone or in-person follow-up by support services (case manager/CHW) so they can work with pregnant women to address gaps in care. ♦♦
- Refer patients and families that have experienced a loss or terminal diagnosis to grief services, such as a grief doula. ♦
- Connect MOBs with support groups for congenital anomalies and/or terminal pregnancies.
- Develop and promote educational materials on use of emergency department versus prenatal care provider, primary care physician, or urgent care.
- Encourage all pregnant women on Medicaid to complete the Healthchek form to facilitate linkage with services.
- Encourage engagement of fathers or the person MOB identifies as her primary support.
- Enhance advertisement of available resources to increase public awareness.
- Establish a protocol to refer all mothers that have experienced a loss to social work or pastoral care.
- Further promote and advertise existing education programs and resources to patients and the public.
- Identify and encourage the engagement with community supports available in MOB's own language.
- Include StepOne in resources available through 211 service.
- Institute a policy to utilize chaplaincy and social work to aid staff for patients with grief responses as a first response prior to contacting security.
- Prioritize follow-up with patients by utilizing community health workers.
- Promote presumptive Medicaid coverage for pregnant women to curb late entry to prenatal care.
- Refer mothers with concerning injuries to domestic violence advocate resources.

MAJOR PROJECTS *(High Impact, High Effort)*
- Ensure that social workers are available in hospitals, especially in the ED and L&Ds, during non-traditional working hours. ♦♦♦
- Increase support services for pregnant women with a history of/current substance abuse and addiction. ♦♦♦
- Increase support services specifically for fathers, including education and wrap around services. ♦♦♦

- Place community health workers in hospital settings to support in-person referrals and connection services. ♦♦♦
- Provide case management to link pregnant women to community services and to help them navigate different systems (e.g., counseling, transportation, childcare). ♦♦♦
- Continue to rebrand home visiting programs/services to allay families' fears about strangers coming into their home/learning intimate details about their lives. ♦♦
- Develop an integrated health view of home visiting that includes a team approach where a case manager/home visitor/CHW is working with an OB/GYN and other service providers as a team rather than as a referral option to help pregnant women navigate different systems (e.g., counseling, transportation, childcare). ♦♦
- Enhance coordination of mental health, addiction and trauma services to improve programs' referral utilization rates. ♦♦
- Enhance patient understanding of medical information by providing supplemental supports such as home visiting nurse who speaks the same language. ♦♦
- Enhance supports for women, both during the preconception period and during pregnancy, using tobacco and other drugs by increasing access to non-judgmental cessation education, treatment programs and vigorous follow-up. ♦♦
- Incorporate screening, referral and connection to social services into the prenatal care process (i.e., "one-stop-shop"). ♦♦
- Provide standardized training for fathers so they can be supportive of and involved in prenatal and infant care, including checklist style materials. ♦♦
- Enhance coordination of care between providers to develop successful treatment plans through a referral to the Central Ohio Pathways HUB. ♦
- Allocate funding and necessary logistics and resources to allow for more social workers and support staff, such as community health workers, to be available for patients in need of support with mental health and/or addiction during pregnancy and beyond.
- Connect FOBs with support groups or father-to-father peer mentorship programs for congenital anomalies and/or terminal pregnancies.
- Contact women on Medicaid by telephone instead of mailing Healthchek form to facilitate linkage with services.
- Coordinate partnerships between providers with CelebrateOne.
- Create an agency to offer support to bridge the gap following aging out of foster care.
- Encourage post traumatic growth education for fathers.
- Encourage postpartum doula services to link to eligible social service programs.
- Establish a protocol for insurance providers, including managed care plans, to refer pregnant women to a community health worker or other needed services.
- Establish a wraparound support model, coordinating care between providers.
- Establish the role of hospital advocates for patients and encourage their use.
- Follow closely with surviving multiples after a loss to offer additional services as necessary.
- Umbrella agencies like CelebrateOne partner with foster care agencies to provide education and resources.

FILL-INS *(Low Impact, Low Effort)*
- Implement universal prenatal screening for home visitation.

OTHER FIMR RECOMMENDATIONS:

QUICK WINS *(High Impact, Low Effort)*
- Offer grief supports that address a family's current loss as well as past history of trauma/loss. ♦♦
- Include payer source on Report of Fetal Death Forms as it appears on Birth Summaries for live births. ♦
- Develop inconspicuous referral materials for abuse such as small referral cards to lessen the possibility of the abuser discovering and retaliating against the mother.
- Develop system to track COVID-19 positive cases due to potential increased risk of premature births and still births.
- Encourage COVID-19 vaccination during pregnancy, or before pregnancy for women of childbearing age.

MAJOR PROJECTS *(High Impact, High Effort)*
- Enhance grief supports for mothers and families that have experienced a previous fetal loss. ♦♦
- Evaluate fetal viability prior to invoking life supportive measures for MOB.

FILL-INS *(Low Impact, Low Effort)*
- Educate fathers that without marriage they cannot make decisions for unborn children in the case that the mother is unable to make them.

NOTE: Some recommendations were posed multiple times throughout the 2021 review year by FIMR CRT members; these recommendations are denoted with a red diamond (♦). Recommendations recurring from previous years are denoted with two red diamonds (♦♦). Recommendations both recurring from previous years and in the 2021 review year are denoted with three red diamonds (♦♦♦).