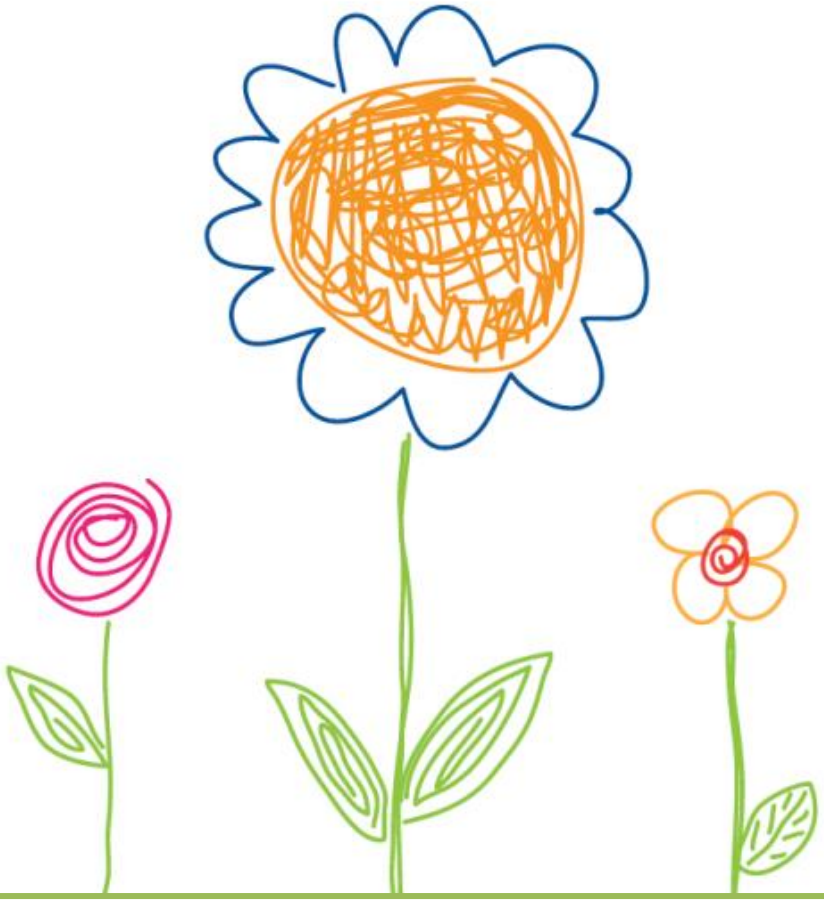

Franklin County
Fetal-Infant Mortality Review (FIMR)

Case Review Team Findings: Year One

(October 2014 - December 2015)

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

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EXECUTIVE SUMMARY

Columbus Public Health (CPH) established the Franklin County Fetal-Infant Mortality Review (FIMR) Program in January 2014. We patterned our FIMR on an evidence-based model established by the National FIMR (NFIMR) Program—a collaborative effort between the American College of Obstetricians and Gynecologists (ACOG) and the Maternal and Child Health Bureau (MCHB), Health Resources and Services Administration. At its core, FIMR is a continuous quality improvement project. The process starts with the detailed review of de-identified cases of fetal & infant death by a multidisciplinary Case Review Team (CRT). This group teases out the significant social, economic, cultural, safety and health systems factors associated with fetal and infant mortality in a community. On an annual basis, the CRT shares its observations with a Community Action Team (CAT) who then determines how best to address barriers to care and gaps in service delivery.

Between October 2014 and December 2015, our CRT met monthly to review a total of 30 cases (21 fetal, 9 infant). Of these 30 cases, 9 included a full interview and 4 included an abbreviated interview. In Year One, the Franklin County FIMR CRT included experts from a variety of fields including: family violence, father involvement, grief support, housing, maternal mental health, neonatology, nutrition, obstetrics, perinatal home visiting, public health, refugee health supports, and social services. On average, the CRT spent 30-60 minutes discussing the themes and needs of each case. By design, we prioritized cases with known risks so we could learn more about our community's service system gaps.

After a detailed review, the four variables that were identified as the *most* pressing need, in the *highest* number of cases were:

- *Prenatal Care*
- *Assessment & Treatment of Drug Addiction*
- *Wholistic Assessment & Referral for "Non-Medical" Services*
- *Home Visiting*

In addition, several variables related to family planning ("Appropriate Birth Spacing," "Family Planning/Preconceptional/Interconceptional Care," "Importance of Being Healthy before Pregnancy") were cited in the majority of cases. Although these variables were rarely identified as the *most* pressing need in a case, the frequency with which they were identified is noteworthy.

It's our goal that these findings inform the interventions pursued by FIMR's Community Action Team (CAT).

ABOUT THE PROGRAM

"Infant mortality is not a health problem. Infant mortality is a social problem with health consequences."[i]

The Problem
Infant mortality—or the death of a baby before his/her first birthday— is a critical indicator of community health. Every year in Franklin County, approximately 150 babies die before their first birthdays. While national infant mortality rates are decreasing, in 2013, Ohio ranked 6th worst in the nation for overall infant mortality. This translates to an infant mortality rate (IMR) of 8.4 per 1,000 live births, a rate which is significantly higher than the Healthy People 2020 goal of 6.0.[ii,iii] Additionally, Black babies in Ohio are dying at over twice the rate of White babies. Fetal death is defined as the death of a fetus including stillbirths and miscarriages. On average, Franklin County has 118 fetal deaths reported annually.[iv] While these deaths are not included in the county's IMR, they remain a significant indicator of community well-being.

The FIMR Model
Columbus Public Health (CPH) established the Franklin County Fetal-Infant Mortality Review (FIMR) Program in January 2014. We patterned our FIMR on an evidence-based model established by the National FIMR (NFIMR) Program—a collaborative effort between the American College of Obstetricians and Gynecologists (ACOG) and the Maternal and Child Health Bureau (MCHB), Health Resources and Services Administration. At its core, FIMR is a continuous quality improvement project. The process starts with the detailed review of de-identified cases of fetal & infant death by a multidisciplinary Case Review Team (CRT). This group teases out the significant social, economic, cultural, safety and health systems factors associated with fetal and infant mortality in a community. On an annual basis, the CRT shares its observations with a Community Action Team (CAT) who then determines how best to address barriers to care and gaps in service delivery.

The Family's Voice
FIMR systematically includes the voices of bereaved families in the review process. The Franklin County FIMR conducts extensive outreach to gather the stories of families affected by feto-infant loss. Then we include their reflections in the de-identified abstracts reviewed by the CRT. Of the 30 cases reviewed in Year One, 9 included a full interview and 4 included an abbreviated interview. Families' voices add vital insight to each case. They illustrate how the "social determinants of health" often affect birth outcomes as much as the medical care women receive.

Program Accomplishments
Since its inception, our FIMR has made great strides.

We've supported bereaved families by:

- Developing a comprehensive Grief Resource Guide for those experiencing feto-infant losses.
- Distributing 450 copies of this guide to affected Franklin County families and 550 copies to area agencies serving this population.
- Mailing personalized condolence messages to over 430 bereaved families.
- Providing in-person and phone support to bereaved families.
- Collaborating with OhioHealth's Pregnancy & Infant Loss Support Group on a memorial candle decoration project. FIMR distributes candles embellished by members of this Support Group to families who participate in the FIMR interview.
- Collaborating with WIC to educate bereaved families about WIC eligibility following a feto-infant demise.

We've enacted the FIMR process by:

- Analyzing Franklin County fetal and infant deaths in order to identify FIMR case-selection criteria.
- Establishing Memoranda of Agreement with Mount Carmel Health Systems, Nationwide Children's Hospital, OhioHealth, the Ohio State University Wexner Medical Center and PrimaryOne Health for the acquisition of medical records.
- Completing 24 interviews (19 full interviews, 5 abbreviated interviews) with bereaved families.
- Convening a multidisciplinary Case Review Team (CRT) to review 30 cases (21 fetal, 9 infant) between October 2014-December 2015.

CASE REVIEW

Case Review Team (CRT)
The success of the FIMR process is directly linked to the enthusiastic participation of the CRT members. It is a closed team that meets monthly. We typically review 3 cases at each 2 hour meeting. Over the past 15 months, the following experts have been active CRT members.

Name	Title	Organization
Meredith Adams Jennifer Fears-Volley	Maternal Mental Health Clinician Maternal Mental Health Clinical Program Director	Catholic Social Services
Katherine Schiraldi Jamie Chambers	Associate Director at Intake Social Program Coordinator	Franklin County Children's Services
Helen Harding	Director of Women's Health	OhioHealth: Grant Hospital
Kristi Timbrook Sheryl Clinger	Training & Development Manager Director of Advocacy/Policy and Community Engagement	The Center for Family Safety and Healing
Robin Catlett	Neonatal Nurse Practitioner, Partners for Kids Program	Nationwide Children's Hospital
Rochelle Chambliss Sonia Murphy	Dietetic Technician, Registered Dietician & Certified Lactation Specialist	Women, Infants & Children
Mark Dodley	Program Coordinator, Father to Father	Columbus Urban League
Tonya Fulwider	Program Director	Mental Health America Franklin County
Erin Heinzman	Administrative Office	Franklin County Jobs and Family Services
Jay Iams	Obstetrics & Gynecology and Maternal & Fetal Medicine	Ohio State University Wexner Medical Center
Cynthia Johnson	Social Worker, Wellness on Wheels	OhioHealth
Milga Liban	Refugee Health Coordinator	Ohio State University Wexner Medical Center
Octavia Mercado	Supportive Service Liaison	Columbus Metropolitan Housing Authority
Aparwa Naik	Neonatologist	Central Ohio Newborn Medicine
Marc Parnes	Retired OBGYN	Multiple affiliations
Lynnette Schroeder	Pastoral Care Department, NICU & Bereavement Chaplain	Nationwide Children's Hospital
Stacie Williamson	Supervisor, Bureau of Children with Medical Handicaps	Franklin County Public Health
Shannon Yang	Administrator, Family Health Division	Columbus Public Health

Case Selection Process
Guided by CPH's Center for Epidemiology, Preparedness and Response and CityMatCH's Perinatal Periods of Risk (PPOR) model, FIMR selected the following kinds of cases to review in depth:

1. Deaths from one of two Perinatal Periods of Risk (PPOR) categories
    - **"Maternal Health/Prematurity"** (blue box)
        - Fetal death: between 500-1499 grams at birth & ≥24 weeks gestation at death
        - Infant death: between 500-1499 grams at birth & no minimum gestational age
    - **"Maternal Care"** (pink box)
      Fetal death: ≥1500 grams at birth & ≥24 weeks gestation at death

2. Deaths with 3 or more maternal risk factors as reported by the Office of Vital Statistics
    - Unmarried
    - Less than a high school education/GED
    - Birth spacing less than 18 months
    - Previous preterm birth
    - Previous poor birth outcome
    - Smoked within 3 months of pregnancy or while pregnant
    - Teenager (<20 at time of birth)
    - Obese pre-pregnancy (BMI ≥30)
    - Enrolled in WIC (as a proxy for income)

3. Deaths to non-Hispanic Black (NHB) women
    - For every one death to a White woman reviewed, the CRT will review two deaths to NHB women

Profile of Cases Reviewed

By design, we prioritized cases with known risks so we could learn more about our community's service systems gaps. Of the 30 cases we reviewed, 24 families lived in one of the 8 identified CelebrateOne communities and another 24 were unmarried. Their educational attainment is as follows: less than a high school diploma or GED (11), high school diploma or GED (11), some college but no degree (5), an Associate's Degree or higher (3). Although we prioritized review of deaths to teen mothers, our cases represented a wide age range: under 20 years old (2), 20-25 years old (7), 26-34 years old (14), over 35 (7).

While we had intended on selecting cases in order to oversample deaths to non-Hispanic Black women, we didn't need to explicitly select cases based on race to achieve this. Simply using the first two sets of criteria netted 19 deaths to non-Hispanic Black women and 7 deaths to White women. Four women identified as Hispanic/Latino. In our sample, 25 mothers were born in the United States. The remaining women were born in Somalia (2), Mexico (2), and Peru (1).

According to Vital Statistics documentation, 15 of the 30 mothers reported smoking in the 3 months prior to pregnancy or during the pregnancy. However, through chart review and family interviews we learned at least 19 women were actually smokers during this timeframe and 24 women had a history of tobacco use. Only 7 of the mothers in our group had a "normal" pre-pregnancy body mass index (BMI) while 11 were "overweight" and 11 were "obese." There was also one mother who was significantly "underweight" with a pre-pregnancy weight of 81lbs. Nearly half of the women reported a history of mental health problems including depression (12), anxiety (5), postpartum depression (4), PTSD (3), suicidal ideation (3), cutting (2), or bipolar disorder (2). Just over one third of the mothers had a history of a sexually transmitted infection including chlamydia (7), trichomonas (5), gonorrhea (3), herpes (2), and/or syphilis (2).

Many of these mothers also had complex social histories. Thirteen women reported a history of childhood stress including trauma (8), physical abuse (6), neglect (5), poverty (4), homelessness (3), involvement in the justice system (3), living in an unsafe neighborhood (3) and sexual abuse (2). Since fetal Vital Statistics documents lack insurance information, it's impossible to gather socioeconomic status for the entire dataset; however, 19 women received WIC while pregnant with the decedent, indicating that nearly two-thirds of the women were known to be living at less than 185% of the federal poverty level during their pregnancies.

Of our sample, 28 women had at least one prior pregnancy. Sixteen of these mothers had a short interconception interval (i.e.: less than 18 months between a previous pregnancy and the conception of the decedent). Thirteen mothers reported a previous miscarriage (loss<20 weeks gestation) and 5 had had a previous intrauterine fetal demise (IUFD) (loss >20 weeks gestation). Half of these mothers had a pervious preterm birth (<37 weeks) and nearly one third had never had a term delivery.

Given our focus on prematurity, we were surprised that only one of the 30 cases was a multiple gestation pregnancy (twins). No cases were conceived using fertility enhancing drugs.

Case Review Team Process
The CRT discussed our 30 abstracted cases at length, quantified each case's characteristics using a detailed list of "Contributing Factors" and "Recommendations" codes, and then voted on which variables were most influential in the outcome of the case. These codes became the basis for our findings.

Case Review Team Findings
When analyzing our findings, we prioritized variables that garnered both "high frequency" and "high vote" scores. If a variable was identified in many cases we called it a "high frequency" variable. If it received a lot of votes overall we called it a "high vote" variable. The following report describes each of these "high frequency"/ "high vote" variables.

CONTRIBUTING FACTORS

Of the 87 "Contributing Factors" variables we tracked, the following five factors rose to the top. The full list of "Contributing Factors" can be found in Appendix A.

1 Placental Abruption
Ten fetal demises and 2 infant deaths involved placental abruptions. In 9 of these cases, the abruption was identified as one of the primary contributors to the demise.

2 Substance Abuse Lifestyle
Although drug use was not a risk factor used to select cases for review, 18 mothers tested positive for drugs during their pregnancies. In 10 of these cases, the mom used only one substance during the pregnancy. In the remaining 8 cases, the mom was a polysubstance user. Drugs used include: marijuana (11), cocaine (4), benzodiazepines (4), opiates (4), alcohol (2), and amphetamines (2). There were 2 moms using prescription Suboxone and one mom using Suboxone illicitly. Providers assessed mom's substance use in 22 cases and 2 women received their prenatal care in a specialty clinic for addicted women.

There were also 19 moms who used tobacco in the 3 months prior to their pregnancy and 11 who continued to smoke during their pregnancies. Eight of these smokers received one or more episodes of tobacco cessation education during her pregnancy and 2 of these smokers received a prescription for nicotine replacement.

3 Presence of Life Course Perspective Risk Factors (stressors in childhood, history of abuse, poverty, lack of support, etc.)
In the FIMR interview, when asked about their childhoods moms often started with, "It was good." or "I got into some trouble." When asked to expand, they painted a better picture of the complex stressors many of them faced. In describing her childhood, one mom said, "My mom didn't pay attention to me and my brother. She was always at work and when she wasn't at work, she was asleep. I was getting picked on at school for not having clothes, not having my hair done . . . our stuff stinking. I would skip school to make sure my younger brother was going to school, make sure he ate and stuff like that. It became a lot on me. I just got tired of it, and (at age 14) I decided to run away. I was out on the streets for about a week. My older brother brought me back but my mom wouldn't keep me. I went to live with my dad and his girlfriend. They didn't trust me. They took me to the doctors and I found out I had trichomoniasis (an STI). After that they put me on birth control. They forced me on depo. I didn't like that they controlled me like that. I hated the depo and it made me gain a lot of weight."

Though some life course factors were noted in the chart, they were most frequently revealed through the FIMR interview process. For this reason, we assume they are underreported in those cases without an interview. That said, 21 cases were coded as having a life course risk factor that contributed to the demise. For many women, these early life stressors followed them into adulthood. The CRT noted present day "Poverty" and an "Other Emotional Stressor during Pregnancy (such as loss of a job, loss of a loved one, incarceration, divorce, natural disaster, etc.)" in 20 cases each.

4 Pre-existing Medical Conditions Such as Asthma, Hypertension, Diabetes, Mental Health Disorders, etc.

Twenty-two cases involved mothers with a pre-existing medical condition, though for only 6 cases was this condition noted as a primary contributor to the demise. Prominent pre-existing health conditions included history of sexually transmitted or other genitourinary infections (13), obesity (11), hypertension (7), diabetes (4), and bicornuate uterus (1).

5 History of Fetal or Infant Loss

The CRT identified previous fetal or infant loss as a contributing factor in 14 cases and as one of the primary contributing factors in 5 cases.

RECOMMENDATIONS

Of the 104 "Recommendations" variables we tracked, the following four factors rose to the top. A full list of "Recommendations" codes can be found in Appendix B.

Prenatal Care

The lack of "early and consistent prenatal care" was noted in 15 of the cases we reviewed and garnered the most votes of any of our "Recommendations" variables. Through the review process we learned that 14 women entered prenatal care in the 1st trimester (0-13 weeks), 9 in the 2nd trimester (14-26 weeks), 2 in the 3rd trimester (27+ weeks) and 5 had no prenatal care at all. 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.

One mother described her first provider interaction as follows. "When I first went in (to the ER) I couldn't talk because I was in so much pain. One nurse. . . she came in. . . she wanted me to move up certain ways and I told her I couldn't. So she was being *smart*. She told me the doctor was coming in and she just left. The doctor came in and had me move certain ways and I told him I couldn't. And he was getting *smart*. That's when my urine came back saying I was pregnant. They came back in and apologized. They said, 'Sorry.' In the future I would want the doctors to hold onto their attitude . . . or not show it, at least."

Another mother described having to take unpaid time off from her work in order to make her prenatal care appointments. She said, "I went to a couple of doctor's appointments. The ones when they have to draw the blood. They were real important. I made sure I kept those. I was still working steady so I was trying to work it around my job schedule. If it's really important, I'd request the day off from my job to go."

Several mothers reported they would have liked their prenatal patient education to be conducted in a more accessible way instead of, as one mom put it, "just giving you a packet and sending you on your way." Other mothers reported having no memory of receiving education on topics that were documented in their chart including kick counts, when to seek emergency care, and how to use a vaginal progesterone suppository.

Assessment & Treatment of Drug Addiction

As outlined earlier, 18 of the 30 mothers used at least one illicit drug during their pregnancies. Unfortunately, aside from describing their marijuana use, substance abusing women avoided discussing the details of their drug use in the FIMR interview. Perhaps they worried about losing custody of other children or struggled with feeling culpable for the demise at hand. Perhaps they wanted to avoid the stigma associated with drug use in pregnancy. Whatever the case, until we hear more from substance using women, it will be hard to know how to better engage these women.

The CRT did review one case that illustrated the multiple challenges faced by a drug-addicted pregnant woman in our community. She had tested positive for marijuana, opiates and cocaine throughout her unplanned, undesired pregnancy. At 15 weeks she requested a referral to a drug treatment program from her prenatal care provider; however, when she couldn't be enrolled immediately, she became angry and left. At 17 weeks, her prenatal care provider tried to start her on Suboxone therapy but because no one who could write the prescription was on site at the time of her appointment, the mom left empty-handed. By 23 weeks, the mom had been transferred to a specialty clinic for drug-addicted pregnant women and was started on Suboxone but by then, she'd become homeless. She reports that without a permanent address, the pharmacy would not fill her Suboxone prescription. At 25 weeks, the provider recommended the mom enroll in an in-patient drug treatment program. The mom declined this service citing a lack of childcare for her other young children. At 34 weeks, she had a placental abruption and stillbirth. At the time of her FIMR interview 6 months later, the mom was newly pregnant with an unplanned, unwanted pregnancy.

This case highlights the complex life demands facing an addicted mother and the multiple ways providers attempted to engage her. Might there have been a way to enroll this mother in drug treatment when she initially sought a referral? Might her children have benefited from respite services so she could complete the in-patient treatment? It's hard to know. But we hope future FIMR interviews with addicted mothers will garner us more insight into this population's needs.

Wholistic Assessment & Referral for "Non-Medical" Services

The CRT thought 24 cases needed "better assessment of the family's home/socioeconomic situation" and in 8 of these cases, this was determined to be one of the case's primary needs. In 22 of our 30 cases, providers conducted at least one domestic violence screening during the pregnancy or at delivery. However, there were few systematic screenings of other critical needs during women's pregnancies. For example, while 5 mothers experienced homelessness and 1 had no utilities during their pregnancies, only 9 of our cases had any housing assessment noted in their charts. Similarly, 12 mothers had problems with transportation and another 12 had problems with poverty during their pregnancies, but only 6 charts noted any assessment of transportation needs and only 5 charts noted any assessment of poverty.

One mother who reported difficulty accessing free transportation through her managed care provider said, "I could have got health insurance to pay for transportation to and from medical appointments but their rules made it hard to use. I had to call 2-3 days before my appointment to set it up and they would only pick me up and drop off at home. I had to walk my babies to daycare if I was going to my appointments . . . that takes 50 minutes round trip. It would have been nice if they would have picked me up at the kids' daycare."

Home Visiting

The CRT thought 16 families would have benefited from "home visits during pregnancy to provide education and monitor clinical status in high risk patients." Of the 30 cases we reviewed, only 1 had a mother who was enrolled in a prenatal home visiting program. The CRT 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.

In addition, nearly half of the others sought care at the ER during their prenatal course. Some of these visits were true emergencies but some were to address non-emergency needs. Home visitors could educate these moms about the normal body changes associated with pregnancy and help them delineate what concerns should be routed to an OB verses the ER.

IN CLOSING

Family Planning: A Chronic Need
There were several "Recommendations" that appeared with such "high frequency" that they are worth mentioning even though they were rarely identified as the *most* pressing suggestion in a case. "Appropriate Birth Spacing" and "Family Planning/Preconceptional/Interconceptional Care" were identified in 17 cases each and the "Importance of Being Healthy before Pregnancy" was identified in 20 cases. Eleven mothers in this sample reported that their pregnancy with the decedent was not only unplanned, but undesired. As one mother said, "Carrying an unwanted pregnancy is stressful." All of which reinforces what we already know: planned, wanted pregnancies with adequate birth spacing are best for moms and best for babies.

Summary
Through FIMR's Year One review of 30 cases of feto-infant loss we've learned a lot about the needs of high risk pregnant women in Franklin County. Four major areas of needs emerged: early entry into prenatal care, assessment and treatment of drug addiction, wholistic assessment and referral for non-medical needs, and perinatal home visiting. In addition, Franklin County needs to support women to have planned, wanted pregnancies. These findings align with the lessons learned from Greater Columbus Infant Mortality Task Force and with the CelebrateOne work plan.

Our Ask of You
Like any good continuous quality improvement project, FIMR needs to be responsive to the changing demographics of affected families, changing resources in the community and the changing priorities of community leadership. If there are particular variables you'd like us to track in 2016, please let us know. We're happy to incorporate new variables into our current dataset.

Plans for 2016
We have several goals for Year Two to improve and expand the Franklin County FIMR program. First, in 2016 we will review 48 cases with the CRT, a 63% increase over Year One. Second, we will experiment with outreach strategies to bereaved families in order to increase the number of cases we review which include a family interview. Third, we will streamline medical record acquisition with the hospitals and try to broaden the variety of non-hospital records we acquire for case abstraction. Fourth, we will continually assess the membership of the CRT and bolster it as needed to ensure it contains a broad range of personal and professional expertise.

[i] National Fetal and Infant Mortality Review Program. The *FIMR Process: A Decade of Lessons Learned*. Retrieved January 7, 2016 from http://www.nfimr.org/site/assets/docs/!Lessons%20Learned.pdf
[ii] Ohio Department of Health Vital Statistics Date analyzed by Columbus Public Health
[iii] United States Department of Health and Human Services, Healthy People 2020. Retrieved January 7, 2016 from: http://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives
[iv] Ohio Department of Health Vital Statistics Date analyzed by Columbus Public Health

APPENDIX A: CONTRIBUTING FACTORS CODES (N=87)

Mother's Medical/OB History
- Mom born preterm and/or low birth weight
- Pre-existing medical conditions such as asthma, hypertension, diabetes, mental health disorders, etc.
- Obesity
- Inadequate nutrition (includes anemia at first trimester PNC visit with hgb<12 or hct<35)
- History of previous preterm and/or low birth weight baby
- History of preterm labor
- History of fetal or infant loss
- History of incompetent cervix
- History of sexually transmitted or other GU infection
- History of cervical conization
- History of elective termination
- Other-1st trimester loss (added 1/14/15)
- Other-2nd/3rd trimester loss (added 5/13/15)

Socioeconomic
- Presence of life course perspective risk factors (stressors in childhood, history of abuse, poverty, lack of support, etc.)
- Maternal age < 21
- Maternal age > 35
- Domestic abuse (during pregnancy or infant's life)
- Sexual abuse (during pregnancy or infant's life)
- Lack of support systems (during pregnancy or infant's life)
- Poverty (during pregnancy or infant's life)
- Other emotional stressors during pregnancy such as loss of job or loved one, incarceration, divorce, natural disaster, etc.)

Medical Conditions during this Pregnancy/Labor
- In vitro fertilization/Assisted reproductive technology
- Multiple gestation
- Anemia (diagnosed after first trimester)
- Gestational diabetes
- Hyperemesis
- STD
- Maternal infection other than STD's
- Pre-eclampsia/eclampsia/HELLP
- Placenta previa
- Premature ROM/Preterm premature ROM
- Prolonged ROM
- Preterm labor
- Placental abruption
- Subchorionic bleed
- Newly diagnosed incompetent cervix
- Other - 1st trimester bleed (added 2/11/15)
- Other- 2nd/3rd trimester bleed (added 5/13/15)

Provider Issues
- No home visiting screening
- Delay home visiting care initiation
- Home visiting screening indicating risk, but no referral given
- No domestic abuse screening
- Poor communication between provider and patient
- Poor communication between providers
- Lack of or inadequate child safety education
- Lack of SIDS prevention/safe sleep education
- Poor follow-up for medically complex child
- Referral to appropriate level of care not given
- Misdiagnosis of mother or child
- Poor management of labor
- Poor management of incompetent cervix
- Poor f/u for OB patient with complications
- Late entry into prenatal care after 13th week
- Inconsistent prenatal care (missed visits)
- No prenatal care
- Signs and symptoms of labor or rupture of membranes and when to call MD
- Signs of decreased fetal movement & when to call MD
- SIDS prevention/Safe sleep
- Pediatric care not established in timely manner
- Signs and symptoms of illness in children and when to call MD
- Water safety
- Child safety (car restraint, medication administration, shaken baby syndrome, childproofing household, etc.)
- Noncompliance with plan of care
- Other-cervical length checks not done per order(added 2/11/15)
- Other - missed opportunity to identify pregnancy (8/12/15)
- Other - how to use 17-P suppositories (added 12/9/15)
- Other - lack of autopsy (added 12/9/15)

Family Planning
- Unplanned pregnancy (parental compliance/knowledge)
- Undesired pregnancy (parental compliance/knowledge)
- Lack of or inadequate family planning education
- Inadequate birth spacing

Substance Abuse
- Substance abuse (medical issue)
- Substance abuse lifestyle (social issue)
- No substance abuse screening
- No referral to smoking cessation/drug/alcohol rehab/treatment
- Referral to smoking cessation/drug/alcohol rehab/treatment not timely

Fetal/Infant Medical Issues
- Genetic/congenital anomaly incompatible with life
- Cord problem
- Previability
- Pre-existing medical condition (includes nonlethal anomalies, metabolic disorders, etc.)
- Prematurity
- Infection

Service Issues
- Medical and social services/community resources unavailable
- Medical and social services/community resources available, but not used
- Quality of medical and social services/community resources inadequate to meet needs
- Patient fear of/dissatisfaction with system
- Other - inadequate number Suboxone providers (added: 12/9/15)

APPENDIX B: RECOMMENDATIONS CODES (N=104)

Socioeconomic
- Better assessment of family's home/socioeconomic situation
- Low cost/subsidized quality daycare
- Early referrals to social services
- Referral for financial assistance, WIC, food stamps, emergency shelter, etc.
- Easier access to care for those w/out insurance
- Medicaid HMO's that are more user-friendly and offer more provider choices for patients
- Development of funding source for terminations due to lethal congenital anomalies
- Child Protective Services involvement (CPS)
- Intensive/timely f/u per CPS when baby returned to parent w/ history of "at risk" behaviors
- Other - extended hours for registration for social services (WIC, utility subsidy, etc.) (added 6/10/15)

Home Visiting Services
- Timely entry of risk assessment scores and/or referrals so care can be initiated promptly
- Use open ended questions on initial contact to solicit more info. from parent
- Contact by phone or in person to obtain missing client info
- Work aggressively for at least 1 month to find high risk patients for services
- Better f/u when patients that are referred don't keep appt.
- Home visits during pregnancy to monitor clinical status in high risk patients and provide education
- Home visit for newborns to assess living situation and assure mom is making/keeping pediatric care visits
- More intensive services/follow-up to address patient education and non-compliance issues
- Better interagency communication between home visiting and other case management (CM) agencies
- Better record keeping per home visiting or other CM agencies
- Enhance communication between providers, hospitals and community services such as home visiting, clinics, etc.

Medical Care & Provider Opportunities
- Home visiting prenatal screening on initial prenatal care (PNC) visit
- Home visiting postnatal screening after delivery before baby is discharged
- Understanding benefits of home visiting services as evidenced by referrals
- Consistent/ongoing domestic violence (DV) screening
- Referral for DV/rape counseling services
- Knowledge of community services available as evidenced by referrals
- Cultural competence
- Sensitivity training for providers
- Better network of interpreters for translation
- More aggressive education per ER staff re: importance of PNC
- Timely referral to local STI centers for all patients w/ STI's
- Closer evaluation of dietary habits and evaluation of diet content/nutritional counseling
- Better management of multiple GU infections
- Improve quality of healthcare in the jail setting/set up accountability for compliance
- More intensive management/follow-up for mothers with pregnancy complications
- Completion of placental pathology/histology
- Better management of incompetent cervix
- Better management of labor
- F/U w/ patients when appts. missed to reschedule; documentation of attempts/ patient responses
- Timely transfer to appropriate level of care
- Discharge ER patients only when stable
- Accurate diagnosis
- Better communication by provider of issues during pregnancy or infant's care, and evaluation of patient's/caregiver's understanding
- Better communication among providers, especially w/ high risk patients
- Better f/u from provider when they refer a patient to another provider to ensure patient did not have lapse in care
- Appropriate genetic testing/autopsy in babies w/ documented dysmorphic features
- Better assessment of patient's/caregiver's understanding of D/C instructions prior to discharge
- Follow AAP guidelines for timely follow-up after hospital discharge
- Better monitoring and f/u per pediatrician's office for high risk and breast fed babies
- Death certificate completion (death type/COD)
- Debrief parents 2-3 months after loss to assess understanding of cause(s)/circumstances of death
- Other - Provide culturally sensitive education to minority populations (added 4/8/15)
- Other - mental health screening/referral (added 11/11/15)

Patient/Caregiver/Community Education
- Importance of protected sex, STI/HIV prevention
- Risks of obesity
- Importance of compliance with plan of care
- Importance of early and consistent PNC
- Importance of proper nutrition and weight gain during pregnancy
- Importance of home visiting services
- Importance of receiving care from an appropriate PNC provider instead of friends/family in the medical field
- Continuing "kick counts" education; Signs of decreased fetal movement and when to call MD
- Signs and symptoms of PROM and when to call MD
- Importance of proper hydration to prevent preterm labor
- Signs and symptoms of preterm labor & when to call MD
- Breastfeeding/lactation consultant
- Safe sleep/SIDS prevention (before D/C & ongoing)
- Infant CPR before D/C from hospital
- Water safety for all children and parents; reinforce at each pediatrician visit
- Child safety education (car restraint, medication administration, shaken baby syndrome, child proofing, etc.)
- Incompetent cervix; cerclage, etc. prior to next pregnancy
- Other - education r/t seeking appropriate level of care (PCP or OB vs. ER) (added 4/8/15)
- Other - importance of self-care (added 4/8/15)
- Other - work with group leader on proper education, especially within minority communities (added 4/8/15)

Grief Support
- Grief counseling/support at delivery and/or pediatric care facility
- F/U with patients that initially decline grief support services
- Have Chaplain see patient to assess needs
- Referral to community agency for grief counseling
- PNC providers take an active part in addressing grief and denial issues
- Postpartum depression screening & assessment of grieving status w/ appropriate referrals
- Other - prenatal palliative care (added 6/10/15)
- Other - grief support for Dads (added 12/9/15)

Family Planning
- Importance of being healthy before pregnancy
- Importance of family planning/ preconceptional/ interconceptional care
- Appropriate birth spacing
- Birth control in the immediate postpartum (PP) period and compliance with chosen contraceptive method
- Family planning counseling with contraception dose/script or BTL prior to D/C
- Community service agency to see patients in hospital post-delivery to give contraceptives before discharge
- Genetic counseling prior to next pregnancy
- Persistent follow-up re: contraception/family planning when patients initially refuse services in hospital or at PP visit

Substance Abuse
- Patient/community education re: importance of not using drugs anytime, esp. when pregnant
- Consistent/ongoing drug screening
- Substance abuse (including smoking cessation) referral for treatment
- Closer following of patients in drug rehab; attempt to contact patients when they don't follow their treatment plan
- Improve accuracy/quality/completeness of vital statistics records
- Improve completeness of PNC records
- Improve completeness/consistency of medical record
- Other - improving acquisition of medical records (added 11/11/15)

Emergency Services/Law Enforcement
- Quicker response
- Sensitivity training for all first responders
- Advanced life support (ALS) capable units in rural areas
- Training re: care of obstetrical and pediatric patients
- Death scene investigation protocols & documentation of unexpected infant deaths
- Improve intra-agency communications, including medical examiner