Public Health
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Mahoning County
District Board of Health

PREVENTING FETAL, INFANT, AND CHILD DEATHS

Report and Recommendations on the Review of 2015 and 2016 Fetal, Infant and Child Deaths

Mahoning County Child Fatality Review Board

Mahoning County Fetal Infant Mortality Review Board

Introduction

This report contains information from the Mahoning County Child Fatality Review Board and the Fetal Infant Mortality Review Board's review of fetal, infant, and child deaths that occurred in Mahoning County in 2015 and 2016. It reflects the work of many dedicated professionals in the community who have committed themselves to gaining a better understanding of how and why these deaths have occurred.

The Ohio General Assembly established the Child Fatality Review (CFR) program in 2000 to identify potential risk factors that lead to child deaths and to offer recommendations for the prevention of similar deaths. Each county is required to establish a CFR Board to review the deaths of children under 18 years of age residing in that county. The Mahoning County District Board of Health coordinates the CFR Board in Mahoning County with representation from the county coroner, local law enforcement, the children services board, the local mental health and recovery board, the city health and vital statistics departments, and area physicians. The Mahoning County CFR Board reviews any death up to, and including, 17 years of age that has been investigated by the coroner, which includes any death unattended by a physician or a death due to either an intentional or unintentional injury. The CFR Board also reviews all deaths over one year and under 18 years of age due to natural causes.

In 2015, the Fetal Infant Mortality Review Board (FIMR) was developed due to the high infant mortality rates in Mahoning County. The FIMR Board investigates fetal deaths from 20 weeks gestation and infant deaths from birth through one year of age. FIMR investigates the circumstances surrounding these deaths to improve service systems and resources for women, infants, and families. The FIMR process includes case analysis of prenatal care and delivery records, as well as a maternal interview. After the review of de-identified case information, priority issues, gaps in service systems, and insufficient resources are identified that may have contributed to the death. The board then makes recommendations for change and engages the community to get involved and act.

Trends in Infant and Child Deaths

Mahoning County has seen a dramatic drop in overall infant and child deaths. In the early 1990's, Mahoning County experienced, on average, 59 infant and child deaths each year. A decade later, that number dropped to an average of 39 infant and child deaths. In 2015, Mahoning County experienced 31 infant and child deaths, and 22 in 2016. Figure 1 depicts the overall downward trend of infant and child deaths in Mahoning County with a high of 69 deaths in 1993 to our lowest recorded number of deaths of 22 in 2016.

Figure 1: Number of Infant and Child Deaths, Mahoning County, Live Birth to 17 Years of Age, 1992-2016

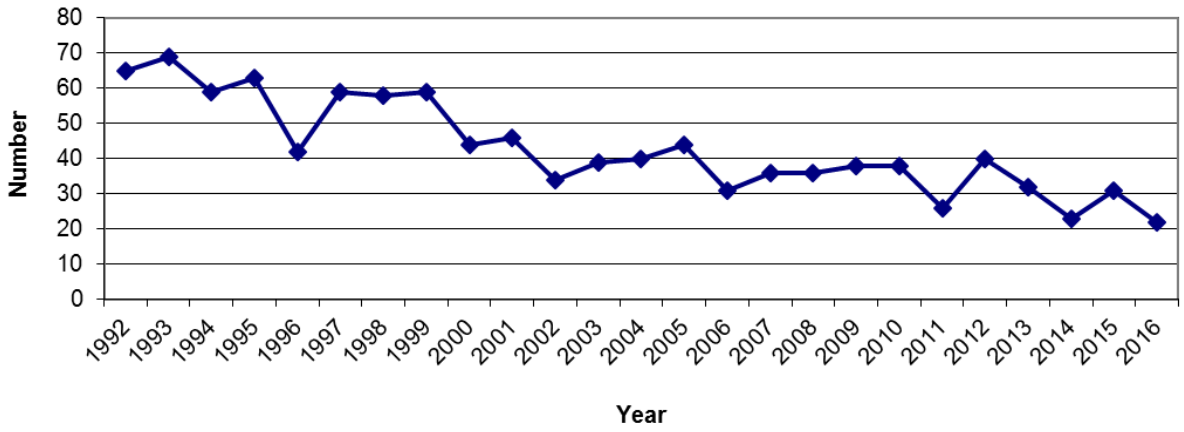
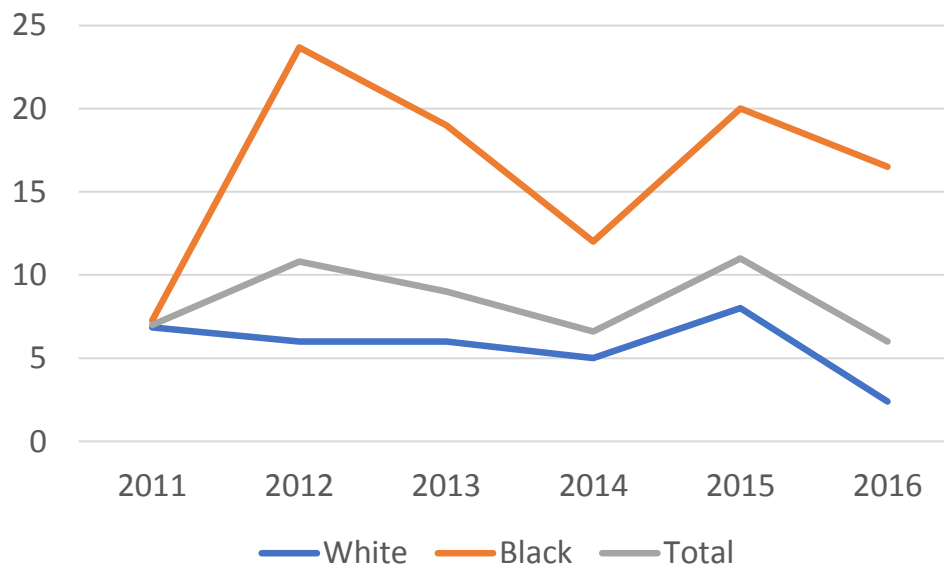


Table 1: Fetal/Infant/Child Death Trends, Mahoning County, Ohio, 2011-2016

	2011	2012	2013	2014	2015	2016
Fetal Deaths	15	16	n/a	n/a	11	15
Neonatal Deaths	11	19	13	10	17	9
Post Neonatal Deaths	5	8	9	5	9	6
Child Deaths (1 -17 Years of Age)	10	13	10	8	5	7
Total Deaths, Live Births to 17 Years of Age	26	40	32	23	31	22

Figure 2: Infant Mortality Rates, by Race, Mahoning County, Ohio, 2011-2016
Source: Ohio Department of Health



Key Findings of 2015 and 2016 Child and Infant Deaths (CFR)

Of the 31 deaths reviewed for 2015 and 22 deaths reviewed for 2016, 77% (n=41) were infants less than one year of age. Figure 3 represents the age distribution of the infant and child deaths. Of the child deaths, 60.4% (n=32) were male verses 39.6% female; 54.7% (n=29) were black, 43.4% were white, and 1.9% were considered another race. In Mahoning County, blacks account for approximately 16% of the population, however, they accounted for 54.7% of the child deaths. This illustrates that a significant racial disparity exists with respect to these young deaths. Over half of the deaths (n=28) occurred among residents of the city of Youngstown, 11.3% of the deaths were residents of Boardman, 9.4% were residents of Canfield City or the township, 7.6% occurred among residents of Austintown, and the remaining deaths were residents of the other various cities and townships in Mahoning County.

Manner of death is a classification of death that explains how the death occurred. There are five manners of death categories on the Ohio death certificate: natural, accident, homicide, suicide, and unknown/undetermined. Natural was the most common manner of death accounting for 60.4% of the children, followed by 20.8% accident, and 9.4% for both suicide and homicide for both years combined. See Figure 4 for a comparison of the categories of manner of death from 2011-2016. After a peak in natural deaths in 2014, the 2015 and 2016 data indicates a downward trend. The graph also indicates a slight upward tick of accidental deaths. Homicide deaths have shown some variability over time. After six years with no child deaths due to suicides, they reappeared in 2015 and 2016, representing 6.5% and 13.6% of child deaths in those years, respectively.

Figure 3: Age Distribution of Infant and Child Deaths, Mahoning County, 2015-2016

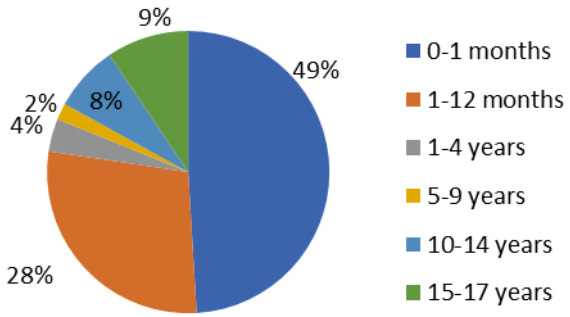
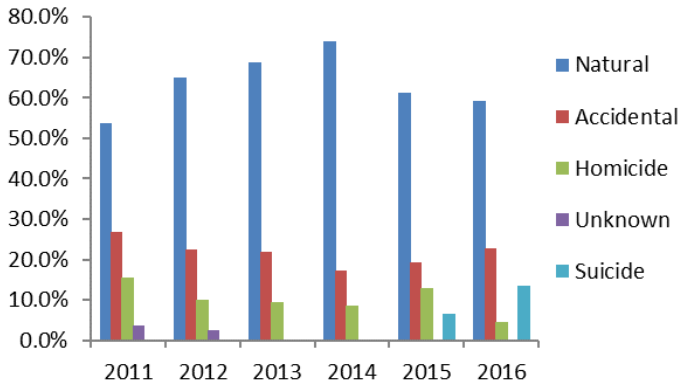


Figure 4: Manner of Child Deaths Mahoning County, 2011-2016 Birth to 17 Years of Age



Besides manner of death, a death is further classified by cause of death which is either a medical or external cause. Disease or other medical causes, such as prematurity or congenital anomalies/birth defects, primarily cause natural deaths. Accidental, homicide, and suicide deaths are caused by an external cause, which can be associated with a specific object or acute process that was caused by something outside the body.

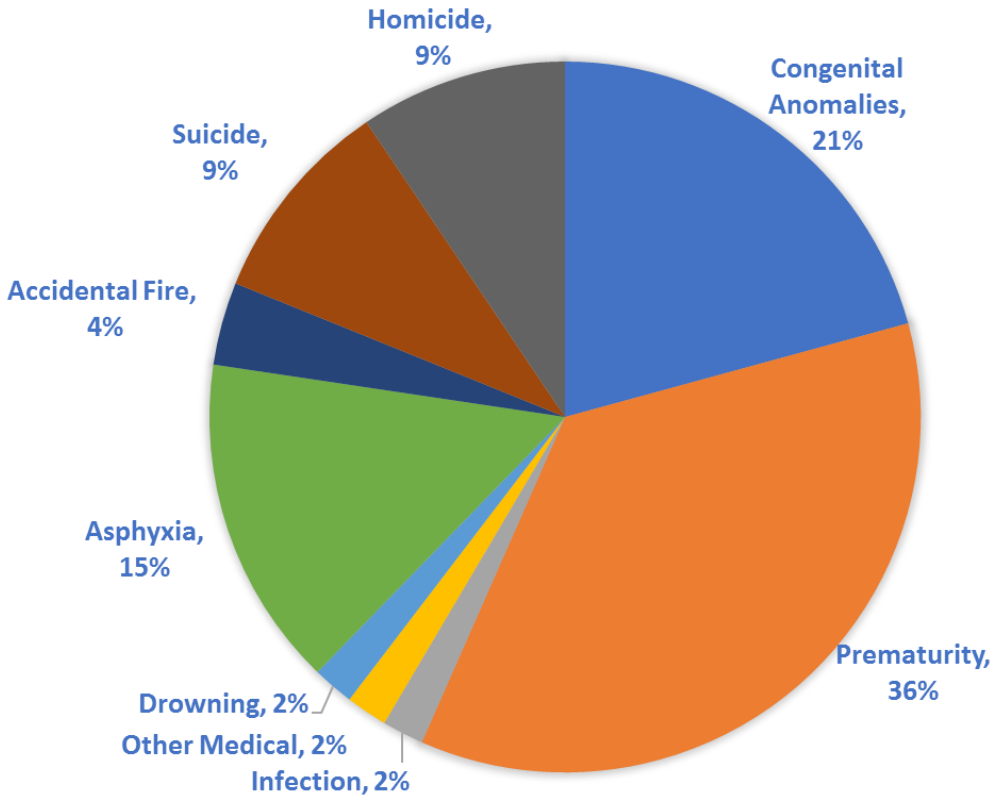
Prematurity and **congenital anomalies** were the most common medical causes of death in 2015 and 2016 which is consistent with previous years. Table 2 and Figure 5 summarizes the 53 child deaths in 2015 and 2016.

External Causes of Death, either intentional or unintentional, accounted for approximately 39.6% of the 2015 and 2016 deaths. **Asphyxia or positional asphyxia** (predominately an unsafe sleep environment) was the most frequent external cause of death followed by a tie between **homicide and suicide** deaths (all causes).

Table 2: Manner and Cause of Deaths by Age Group, Mahoning County, 2015 and 2016

Manner	Cause	0-1 Months	1-12 Months	1-4 Years	5-9 Years	10-14 Years	15-17 Years	Total
Natural	Congenital Anomalies	5	5	1				**11**
	Prematurity	19						**19**
	Pneumonia and other Infections		1					**1**
	Medical -Other						1	**1**
Accident	Drowning					1		**1**
	Asphyxia or positional asphyxia	2	6					**8**
	Fire		1	1				**2**
Suicide						2	3	**5**
Homicide	Gunshot/Stabbing						1	**1**
	Struck by person/object		2					**2**
	Fire					1		**1**
	Poisoning				1			**1**
Total		**26**	**15**	**2**	**1**	**4**	**5**	**53**

Figure 5: Cause of Death, Mahoning County, 2015 and 2016



There is a usual shift of the cause of death as a child ages. Figure 6, below, depicts the shift from a medical cause of death during the first year of life compared to external causes of death, such as unsafe sleep environments, drowning, and falls for example, as a child ages.

Figure 6: Medical versus External Causes of Death, by Age of Child, Mahoning County, 2004-2016

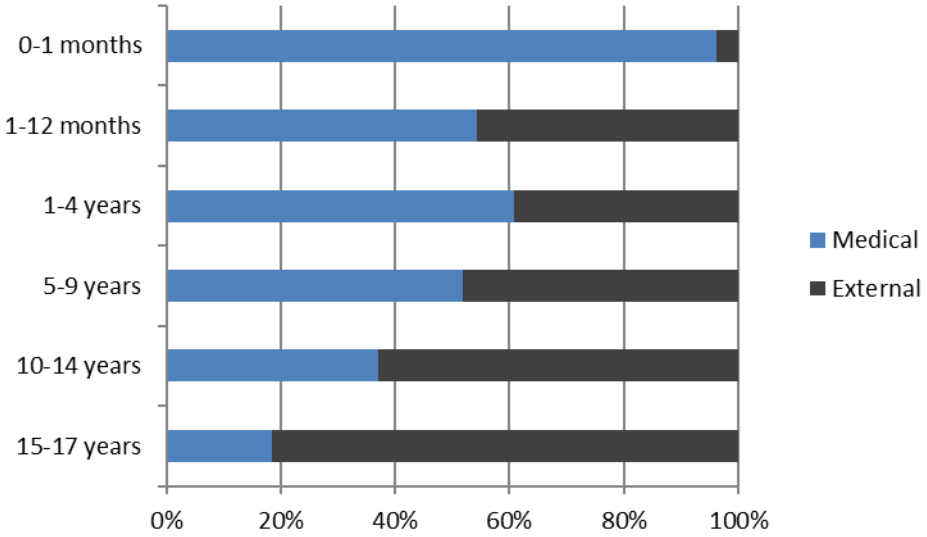


Table 3 lists cumulative Mahoning County death data from 2004 to 2016 by manner and cause of death by age group. Between 2004-2016, prematurity alone accounted for over half (54.1%) of the child deaths due to natural causes and 36.6% of all deaths. Prematurity combined with congenital anomalies accounted for 78.4% of the natural deaths and over half of all deaths (53.1%). Too many (79.1%) of our children who died due to natural causes did not live to celebrate their first birthday.

Asphyxia or positional asphyxia increased as an external cause of death, from 27.6% to 29%; and death by gunshot regardless of the manner of death (accident, homicide, or suicide) consistently remained the second most common external cause of child death in Mahoning County at 25.4% for the period between 2004-2016. Motor vehicle crashes as an external cause of death showed a decrease from previous years and accounted for 15.9% of deaths due to external causes.

Overall, looking at the child death data from 2004-2016, 64.8% of the deaths were of infants less than 1 year of age. The top five causes of death to infants and children under the age of 18 are:

- Prematurity (36.9%)
- Congenital Anomalies/birth defects (16.6%)
- Asphyxia and Positional Asphyxia (9.2%)
- Homicide by Gunshot (6.4%)
- Motor Vehicle Crashes and Pneumonia/other infection - (5% each)

Table 3: Manner and Cause of Deaths by Age Group, 2004 – 2016

Manner	Cause	0-1 Months	1-12 Months	1-4 Years	5-9 Years	10-14 Years	15-17 Years	Total
Natural	Neurological		1	2	3		1	**7**
	Cancer		1	3	5	7	2	**18**
	SIDS		6					**6**
	Cardiovascular			1		1	3	**5**
	Pneumonia and other infections	5	9	6	1	1		**22**
	Congenital Anomalies/Birth Defects	33	17	15	5	1	1	**72**
	Prematurity	145	14	1				**160**
	Other Medical	1	2				3	**6**
Accidental	Fall or crush			1				**1**
	Poisoning			1		1	1	**3**
	Drowning		1	3	2	1	2	**9**
	Fire or burn		1	1		2		**4**
	Vehicular			3	4	4	11	**22**
	Asphyxia or positional asphyxia	7	32		1			**40**
	Gunshot			2		1		**3**
Suicide						3	8	**11**
Homicide	Gunshot			1	3	2	22	**28**
	Struck by Person/Object		5	3		1		**9**
	Fire			2	2	1		**5**
	Malnutrition		1					**1**
	Poisoning				1			**1**
Unknown	Undetermined		2	1		1		**4**
Total		191	92	46	27	27	54	**437**

Key Findings of 2015 and 2016 Fetal and Infant Deaths (FIMR)

Mahoning County FIMR Board data analysis revealed that many infants do not survive because they are born too little or too soon (premature and at low birth weight) and that poor maternal pre-pregnancy health is contributing to infant mortality. Of the 2015 and 2016 fetal and infant deaths, 12 infant deaths and 11 fetal deaths, for a total of 23 deaths, were reviewed by the Fetal Infant Mortality Review Team (FIMR).

Obesity (defined as a BMI of over 30) was most commonly identified as a priority issue, followed by using alcohol, tobacco, or other drugs (ATOD), the lack of the proper inter-pregnancy spacing (defined as less than 18 months between a live birth and the conception of a subsequent pregnancy), as well as hypertension. See Figure 7 for a graph of the identified priority issues in the deaths reviewed. See also Figure 8 for a graph of the priority issues divided between fetal and infant deaths.

The priority issues identified most commonly in cases of prematurity (defined as a live birth before 37 weeks of pregnancy are completed) were related to the health of the mom going into the pregnancy, e.g. maternal infections such as sexually transmitted diseases, obesity, and hypertension.

Figure 7: Mahoning County FIMR Case Review, Identified Priority Issues, 2015 and 2016

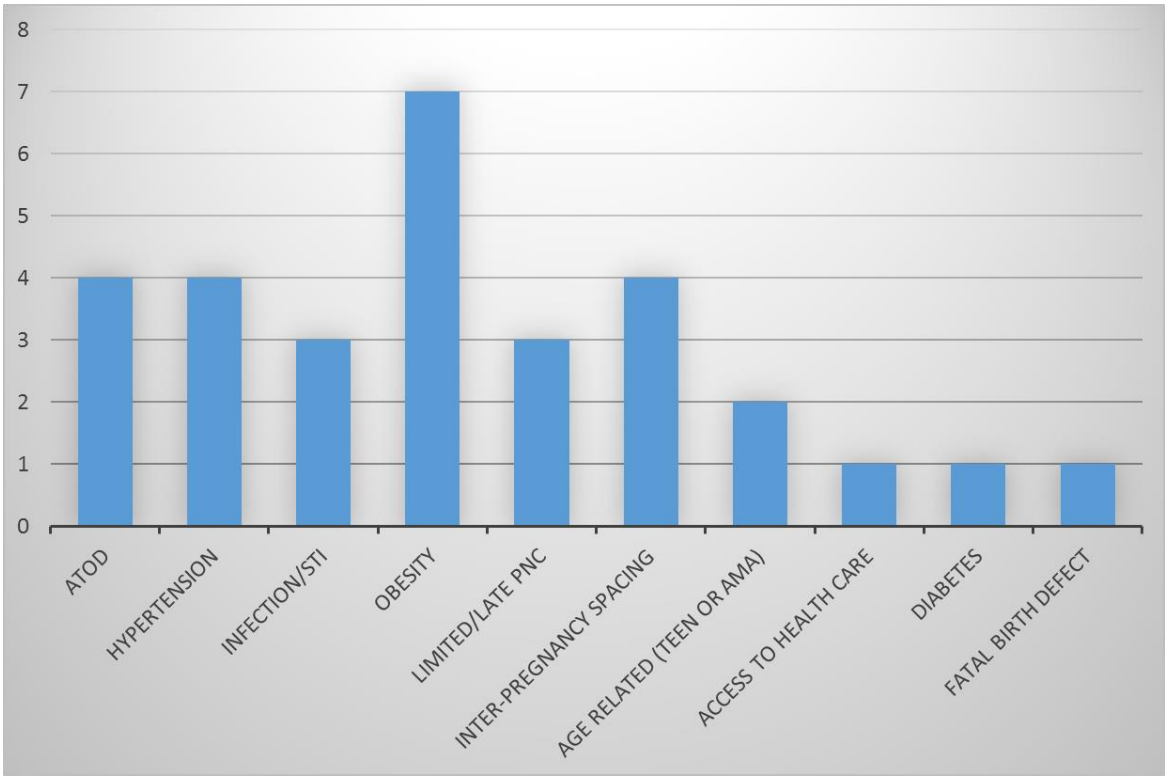
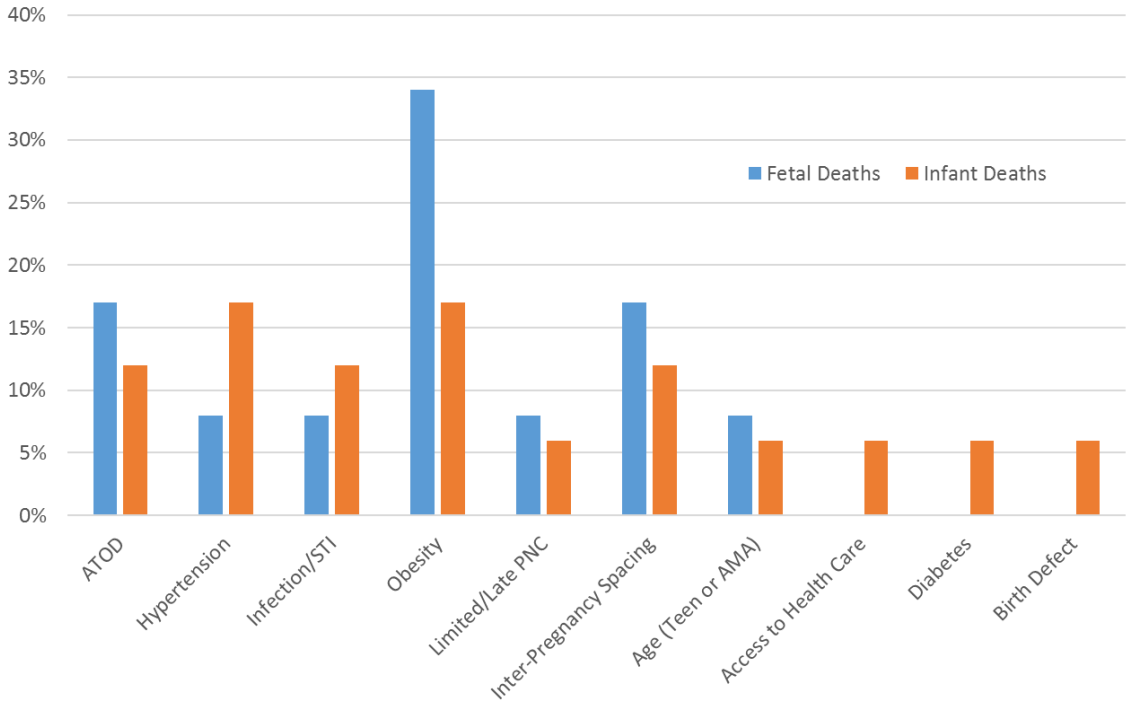


Figure 7: Mahoning County FIMR Case Review, Compared Identified Priority Issues, Fetal vs. Infant Deaths, 2015 and 2016



Preventive Measures

Infant Deaths

The FIMR Team made several recommendations that are based on education and are currently being undertaken by the MY Baby's 1st Infant Mortality Prevention Coalition. The coalition is a motivated group of individuals and agencies who are working together to decrease the alarmingly high infant mortality rate in Mahoning County and reduce racially disparate birth outcomes.

The health of the mother entering the pregnancy is critical and is evident by the priority issues identified. Women considering a family should take into consideration their pre-conception health. To improve pregnancy outcomes, health issues such as obesity, hypertension and other chronic disease, or infections such as sexually transmitted diseases should be addressed with a physician prior to conception. It is also important to receive early prenatal care and when indicated, participate in alcohol, tobacco or drug education and cessation programs.

Inadequate birth spacing is also a significant issue impacting pregnancy outcomes in Mahoning County. The American College of Gynecologists recommends that a woman wait 18 months between a live birth and the conception of a subsequent pregnancy or 6 months after an early pregnancy loss. Education of providers and the community on proper birth spacing and promoting the use of long-acting reversible contraception (LARC) is being conducted by members of the MY Baby's 1st Coalition to combat this cause of infant mortality.

Additional recommendations included:

- Increased access to health care for women, including the expansion of after-hours appointments for prenatal care
- Providing pregnancy and women health care information on college campuses
- Program outreach to high risk zip codes
- Increase maternal genetic testing after any birth with chromosomal abnormalities
- Increased comprehensive sex education
- Review protocols regarding the necessity for hospital admission for closer blood pressure monitoring
- Education regarding the importance of and how to count kicks during the 3rd trimester

Accidental Infant Deaths in a Sleep Environment

The CFR Board recommends continued safe sleep education and funding for safe sleep programs. The *Cribs for Kids* program was initiated to provide a safe sleep environment to caregivers who are unable to provide a safe sleep environment for their infants. It was also recommended that cribs be available to caregivers when a child is not living in a traditional environment or for emergency situations. A flyer was also developed by Akron Children's Hospital and Safe Kids Mahoning Valley on the safe introduction of a newborn to family pets.

Fire Deaths

The CFR Board supports the work of the Mahoning Valley Safe Kids Coalition on their education efforts to prevent unintentional injuries. Education and outreach is needed regarding the necessity of properly working smoke detectors with working batteries. Fire safety education should emphasize the need for an evacuation plan, including two escape routes.

Suicide Deaths

With suicide deaths on the rise, early intervention is necessary for troubled teens. It is important for friends to know what to do when a friend talks about or threatens suicide and how to report it to a trusted adult or an organization. Anti-bullying (in-person or cyber-bullying) messages need to continue to be reinforced.

Homicide Deaths

The CFR Board recommends the following to reduce homicide deaths:

- Appropriate supervision of children in homes where weapons might be present. Gun safety education needs to continue the message of storing firearms and ammunition separately, and in secured locations beyond the reach of children.
- Improved early intervention in situations of a long-standing history of family neglect.
- Promotion of the Safe Haven Law, where if a parent feels that they cannot adequately care for their newborn, the infant, up to 30 days old, can be left anonymously with an employee on duty at any hospital, emergency medical services provider or law enforcement agency in Ohio.
- Requirement of post-partum home visits to receive and maintain managed care benefits.
- Education and outreach on parenting skills, stress management, the importance of a support system, family planning/contraception options, and paternal involvement.

Dedication and Acknowledgements

We respectfully dedicate this report to the memory of the children whose lives have been cut short and to the families and friends who have been impacted by these tragedies. These families and friends have endured one of the most difficult journeys in life. To them, we express our deepest sympathy.

This report is also dedicated in the memory of Dr. Joseph Ohr, forensic pathologist, Mahoning County Coroner's office, for his compassion and dedication for helping to tell the stories for these children who were not able to speak for themselves.

Thank you to the individuals and agencies who serve on the CFR and FIMR Boards for their professional expertise to work toward preventing future fetal, infant, and child deaths. Special thanks to the Youngstown City Health District, the local hospitals, and the investigators of the Mahoning County Coroner's Office for their assistance, expertise, and compassion.

Together we can prevent many child deaths and create a safer and healthier environment for our children.

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July 2016