



MISSISSIPPI STATE DEPARTMENT OF HEALTH

---

## 2012 Mississippi Infant Mortality Report

---

Presented to

Chairman, Public Health and Welfare Committee,  
Mississippi Senate

Chairman, Public Health and Human Services Committee,  
Mississippi House of Representatives

Prepared by:

Juanita Graham, DNP, RN, FRSPH  
Mary M. Wesley, MPH  
Lei Zhang, PhD, MSc, MBA  
Office of Health Data and Research

Dick Johnson, MS  
Vital Records/Public Health Statistics

Connie L. Bish, MS, PhD, MPH  
State MCH Epidemiologist

Mississippi State Department of Health  
Mary Carrier, MD, MPH  
State Health Officer

**December 31, 2012**

---

## Introduction

---

During 2012, infant mortality remained a priority for the Mississippi State Department of Health (MSDH). Infant mortality is the death of babies less than one year of age. The infant mortality rate is the number of infant deaths that occur per 1,000 live births. In 2011, the Mississippi infant mortality rate was 9.4 infant deaths per 1,000 live births. The national rate in 2006 was 6.7 infant deaths per 1,000 live births with a national goal of 6.0 deaths per 1,000 live births that is a 10% reduction by 2020. In Mississippi, a 10% decrease in infant mortality would result in a rate of 8.5 infant deaths per 1,000 live births. The MSDH recognizes that a 10% decrease by 2020 requires continued focus and collaboration.

This report utilizes data from the 2011 Mississippi Vital Records and Public Health Statistics and the 2010 Mississippi Pregnancy Risk Assessment Monitoring System (PRAMS). The Health Services Office of Health Data and Research compiles this report annually as required under § 41-3-15 (1)(c)(viii), MS Code of 1972. The report illustrates basic Mississippi infant mortality data and highlights activities implemented by the MSDH to improve maternal and infant health in Mississippi and reduce the rate of infant deaths.

---

## Mississippi Infant Mortality Data

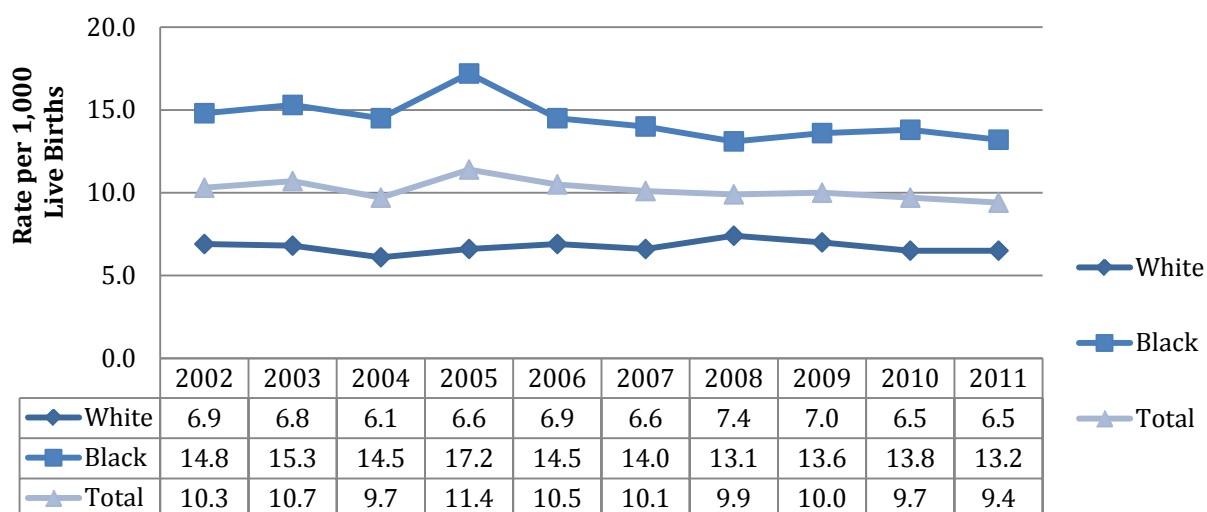
### Causes of Infant Mortality

According to the 2011 Mississippi Vital Statistics, the leading causes of death among Mississippi infants include birth defects, low birth weight and prematurity, Sudden Infant Death Syndrome (SIDS), maternal complications during pregnancy, and accidents (MSDH, 2011). Racial disparities, maternal health before and during pregnancy, and prenatal care also impact infant mortality.

### Infant Mortality Trend

The Mississippi infant mortality rate remains relatively unchanged for more than a decade (Figure 1), and averages around ten infant deaths per 1,000 live births. The disparity between white and black infant mortality rates continues to exist with approximately two black infants dying per every one white infant that dies.

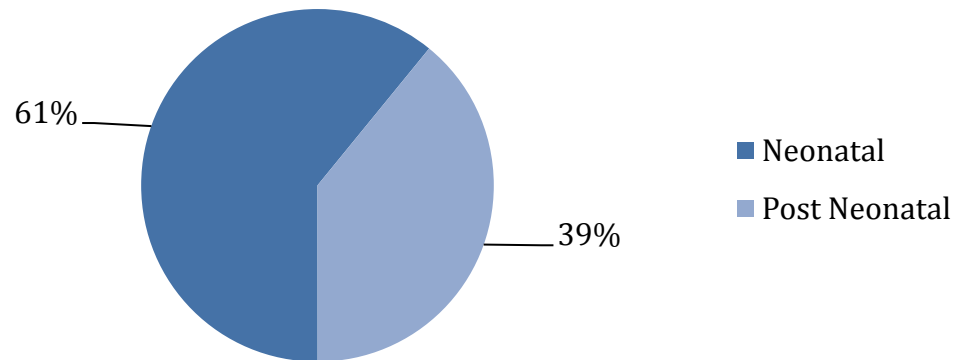
**Figure 1. Infant mortality rate, MS, 2002-2011**



## Infant Mortality by Period of Death

Neonatal deaths occur within the first 28 days of life. Post neonatal deaths occur after the 28<sup>th</sup> day of life and before an infant's first birthday. In 2011, 61% of infant deaths were neonatal deaths and 39% were post neonatal deaths.

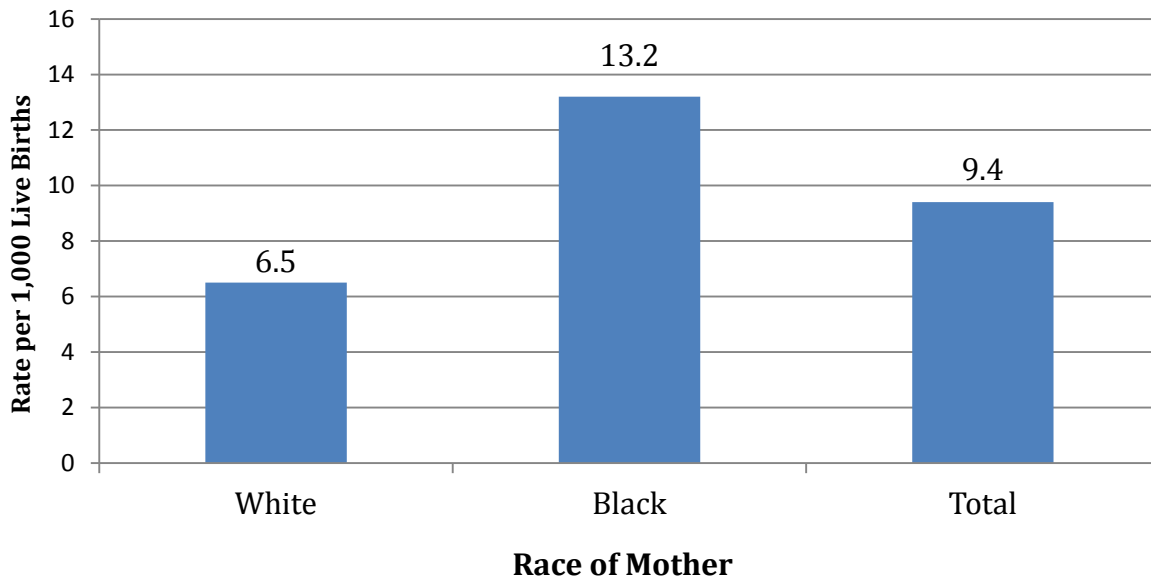
**Figure 2. Infant mortality by age at death, MS, 2011**



## Infant Mortality by Race

In 2011, the white infant mortality rate was 6.5 infant deaths per 1,000 live births and the black infant mortality rate was 13.2 infant deaths per 1,000 live births (Figure 3). This is a consistent racial disparity in Mississippi.

**Figure 3. Infant mortality by race, MS, 2011**

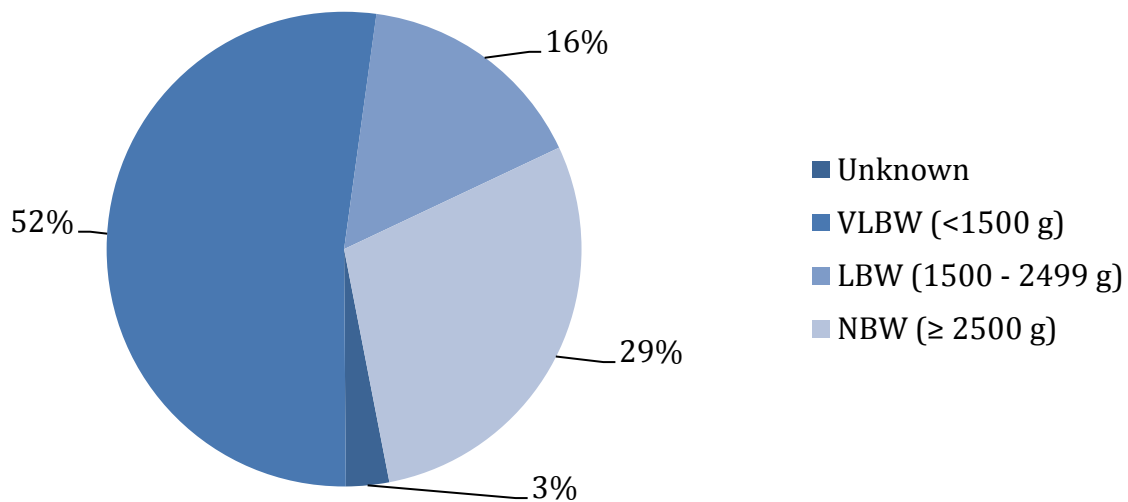


## Infant Mortality by Birth Weight

The lower an infant's weight at birth, the greater the risk for problems including death. Low birth weight is one of the leading causes of infant death in the state. For optimal health, infants should have a normal birthweight (NBW) of at least 2,500 grams (about 5 pounds and 8 ounces). Low birthweight (LBW) is less than 2,500 grams, but at least 1,500 grams (about 3 pounds and 5 ounces). Very low birthweight (VLBW) is less than 1,500 grams.

During 2011, the rate of deaths among VLBW infants was 223.6 per 1,000 live births as compared to a rate of only 3.6 among NBW infants. VLBW infant deaths accounted for more than half (52%) of all Mississippi infant deaths (Figure 4). NBW infant deaths accounted for 29% (Figure 4).

**Figure 4. Percent of infant deaths by birthweight, MS, 2011**

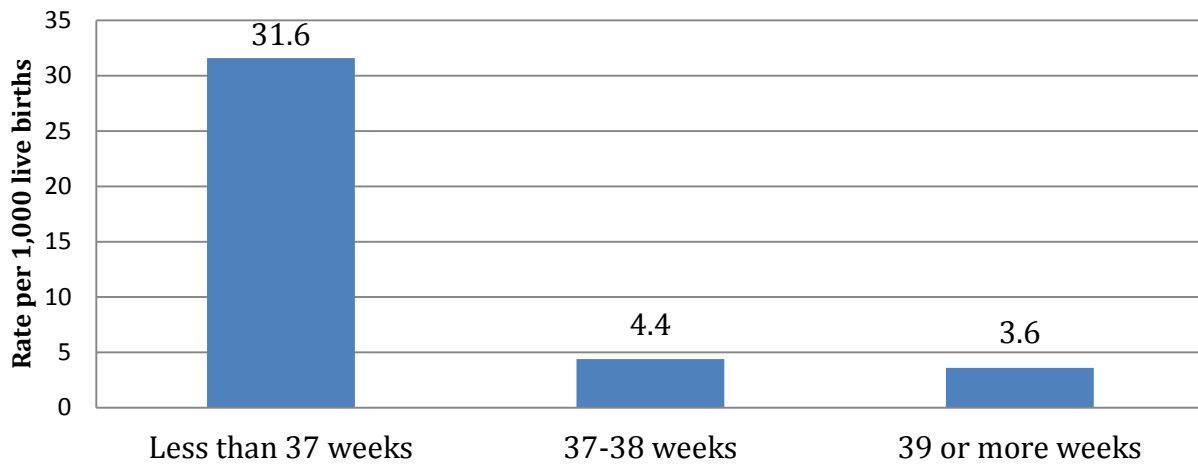


## Infant Mortality by Gestational Age

Similar to birthweight, the lower the gestational age of an infant at birth, the greater the risk for problems including death. Gestational age refers to the number of weeks a pregnancy lasts before delivery. A normal gestation, or pregnancy, should last about 40 weeks. Premature births are those occurring at less than 37 weeks of gestation.

The mortality rate among infants born at less than 37 weeks of gestation was 31.6 infant deaths per 1,000 live births compared to a mortality rate of 4.4 among infants born at 37-39 weeks of gestation. Among infants born at 40 or more weeks of gestational age, the mortality rate was 2.9 infant deaths per 1,000 live births.

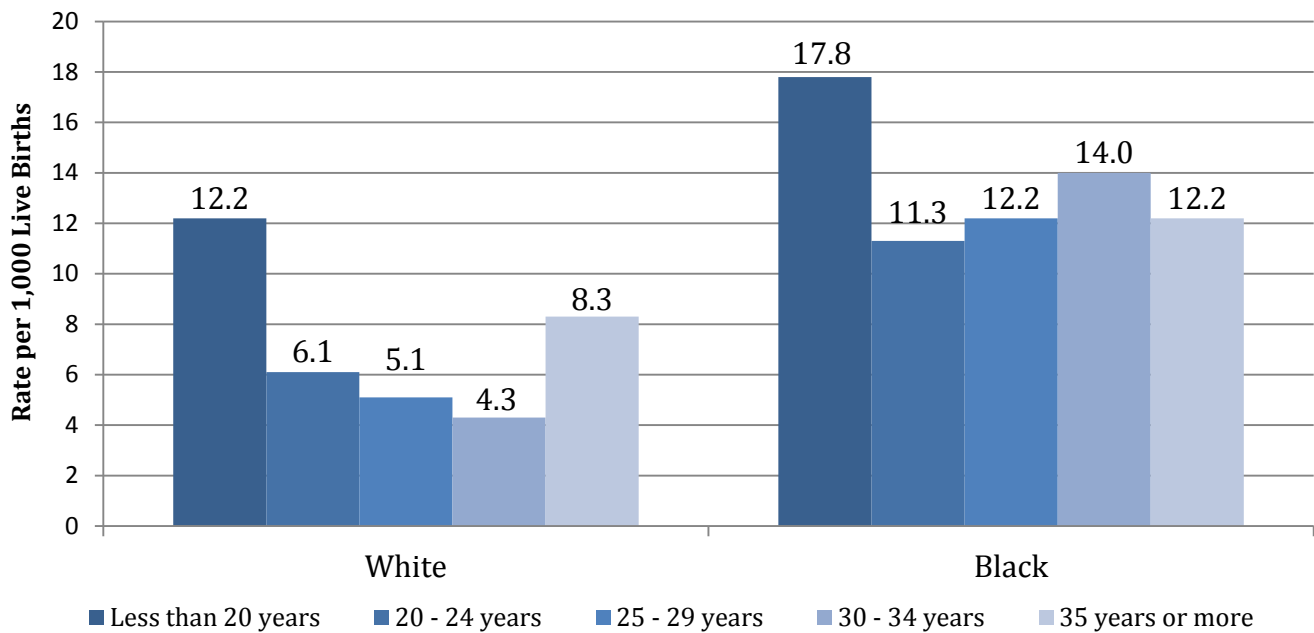
**Figure 5. Infant mortality by gestational age, MS, 2011**



## Infant Mortality by Maternal Age

Infant mortality rates varied by maternal race and age (Figure 6). Regardless of age, infant mortality rates were higher among black mothers compared to white mothers. The greatest disparity was among mothers 30-34 years old (White 4.3; Black 14.0). For both black and white mothers, babies born to mothers less than 20 years of age had the highest infant mortality rates.

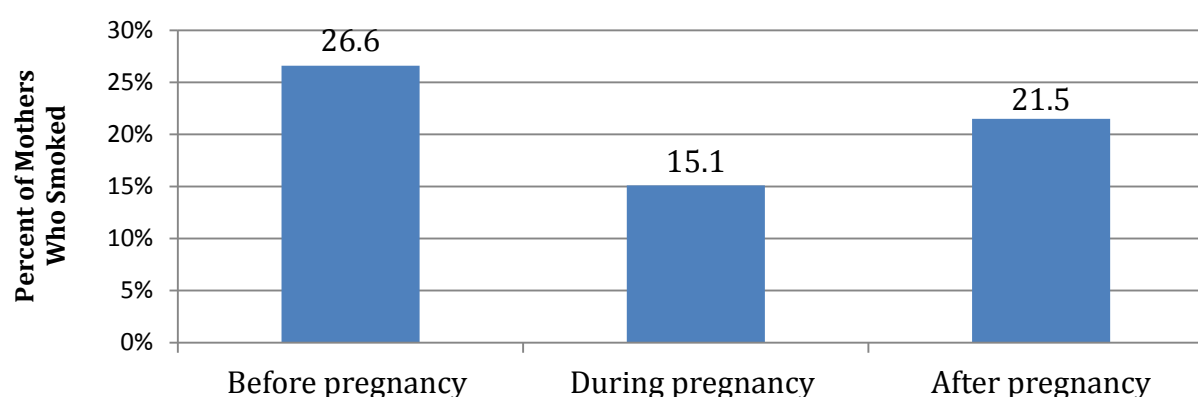
**Figure 6. Infant mortality by race and age of mother, MS, 2011**



## Maternal Smoking

Maternal smoking can result in delivery of infants that are small for their gestational age as well as contributing to risk of low birthweight, premature birth, and infant death. According to the Mississippi Pregnancy Risk Assessment Monitoring System (PRAMS), smoking decreased 43% from before pregnancy to during pregnancy (Figure 7). Although smoking increased following pregnancy, smoking prevalence after pregnancy remained lower than before pregnancy.

**Figure 7. Maternal smoking, MS PRAMS, 2010**



## Infant Sleep Positioning

Infants sleep safest alone, on their backs, and in a crib in a smoke-free environment. Unfortunately, barely more than 61% of Mississippi mothers reported exclusively placing their infant on their backs to sleep. Regardless of age, race, education, marital status, or payer source, an insufficient number of Mississippi mothers report exclusively placing infants on their backs to sleep (Table 1).

**Table 1. Exclusive back sleep positioning, MS PRAMS, 2010**

<b>State Total</b>	<b>61.70%</b>
<i>Less than 19 yrs old vs. 19 and greater yrs old</i>	<i>60.7% vs. 61.8%</i>
<i>Black vs. White</i>	<i>51.9% vs. 69.0%</i>
<i>Less than high school vs. High school and greater education</i>	<i>62.1% vs. 61.6%</i>
<i>Not married vs. Married</i>	<i>57.1% vs. 67.8%</i>
<i>Medicaid for prenatal care or delivery vs. Not Medicaid</i>	<i>57.7% vs. 71.5%</i>



---

## Work Plan and Progress Report

---

During 2012, MSDH adopted six evidence-based areas of focus to improve maternal and infant health and reduce infant deaths. The topics include: 1) preconception health, 2) access to 17-alpha hydroxyprogesterone caproate (17-P), 3) a 39-week initiative, 4) perinatal risk management (also referred to as perinatal regionalization), 5) smoking cessation and limiting second hand smoke exposure, and 6) safe sleeping environments for infants. These domains target premature birth, LBW, and SIDS, which are among the leading causes of infant death in Mississippi. MSDH adopted these activities in response to an Association of State and Territorial Health Officers (ASTHO) Presidential Challenge calling for an 8% reduction in premature births by 2014 (2).

Preconception health relates to the state of a woman's health before she becomes pregnant. Mississippians bear a significant burden of chronic health conditions such as obesity, high blood pressure, and diabetes. Many women of childbearing age suffer from these conditions that are known to complicate pregnancy and increase risk of poor birth outcomes. Optimal preconception health for the mother provides benefits for the mother and the infant.

Premature and low weight births often occur in response to maternal complications during pregnancy. Some mothers even choose early C-section delivery electively. Many studies document the effectiveness of a drug known commonly as 17-P. Weekly 17-P injections can delay premature delivery by several weeks. As discussed earlier in this report, every week counts towards better health for mother and infant and lowered costs for the care of the infant born too soon. Too often mothers or physicians choose early C-section. Early elective C-section provides convenience to physicians and mothers and helps ascertain the date of birth, such as scheduling a birth to coincide with the birthday of another family member. However, the normal gestational period for human infants is 40 weeks (3), and all pregnancies should last at least 39 weeks before delivery (unless there is a medical complication) to result in the healthiest mother and baby.

Finally, clean air is essential to the health of the mother and to the infant and family. Smoking and/or exposure to second hand smoke during pregnancy increases the risk of some birth defects, low birthweight, premature birth, SIDS, and pregnancy complications

---

(4) which are the leading causes of infant death in Mississippi. Many mothers elect to quit smoking while pregnant, but may resume smoking following the delivery. The new baby needs clean air, too. Clean air is just one element of a safe sleep environment for baby. Babies should always be placed to sleep on their backs, alone in a crib, in a smoke-free room.

MSDH began implementing the activities described above and participating in several collaborative activities to improve maternal and infant health within the state. The diagram in Figure 8 (next page) illustrates how the activities intermingle and work collaboratively both internally and externally to achieve the best health for Mississippi moms and babies, at the lowest possible cost.

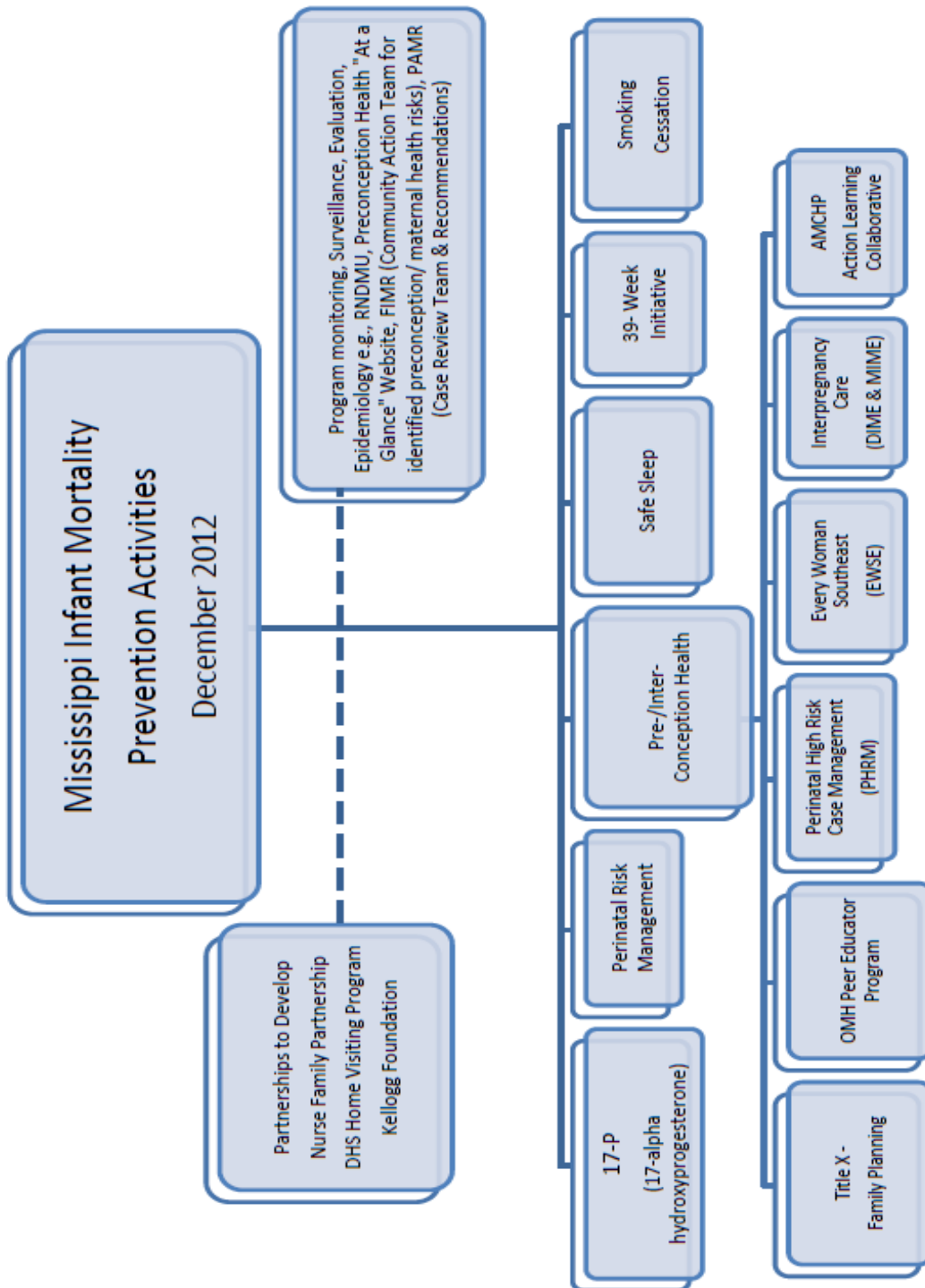
MSDH implemented two mortality surveillance and review programs during 2012. In May 2012, a Fetal Infant Mortality Review (FIMR) program began as a pilot program in Public Health District IX along the Mississippi Gulf Coast. FIMR is an anonymous review process of fetal (stillbirth) and infant deaths. A summary of these reviews are presented to the community in order to improve services and resources for women, infants and families and potentially reduce the occurrence of future deaths. During November 2012, a Pregnancy-Associated Mortality Review (PAMR) was implemented following a noted increase in the number of maternal pregnancy-associated deaths during calendar year 2011. Similar to the FIMR process, the PAMR process reviews pregnancy-related deaths. Combined data from the two surveillance programs provide a rich source of data that can be utilized for both program planning and program evaluation.

The MSDH seeks a \$1 million investment in activities designed to reduce and prevent premature and low weight births in Mississippi. These funds will be utilized to support the six evidence-based areas of focus that improve maternal and infant health and reduce infant deaths as described above. These domains target premature birth, LBW, and SIDS, which are the leading causes of death among infant Mississippians and likely are the leading contributors to health care costs for infants. In 2011, MS women and families had 6,582 premature babies, 4,705 low weight babies, and 777 infants were either stillborn or died before their first birthday. Based on the financial projections presented in an October 2012 Return on Investment report to the Mississippi Legislature, focused efforts to reduce preterm births by 8% might yield \$15 million in saved excess costs, about \$2 million saved

per extra week of pregnancy, and about \$5 million for a \$1 million investment in a high risk pregnancy care program. Quantifying emotional costs and lifelong burden to children and families for lifelong illness was not considered but is no less important. Preventive care will always be less expensive than restorative care in regards to actual healthcare expenditures and quantity and quality of life. For Mississippi, a \$1 million investment in prevention efforts that reduce premature and low weight births potentiates millions in fiscal savings and immeasurable physical and emotional benefits for Mississippi families.

---

Figure 8.



## References

---

1. Mississippi State Department of Health. (2011). Mississippi Vital Statistics Report, 2011. Available online at <http://msdh.ms.gov/phs/2011/Bulletin/vr2011.pdf> .
  2. Lakey, D. (2011). 2011 – 2012 President’s Challenge; The Healthy Babies Project. Access online at [www.astho.org/t/pres\\_chal.aspx?id=6484&source=govdelivery](http://www.astho.org/t/pres_chal.aspx?id=6484&source=govdelivery) .
  3. Gibbs, R. S., Karland, B. Y., Haney, A. F., & Nygaard, I. E. (2008). Prenatal care. *Danforth's Obstetrics and Gynecology*, (p. 4), Philadelphia, PA: Lippincott Williams & Wilkins.
  4. Centers for Disease Control and Prevention. (2012). *Tobacco Use and Pregnancy*. Access online at <http://www.cdc.gov/reproductivehealth/tobaccousepregnancy/> .
-