

2010 Mississippi Infant Mortality Report¹

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Prepared by

Mary Wesley, MPH
Epidemiologist, Office of Health Data and Research

Juanita Graham, MSN, RN
Chief Nurse, Health Services

Dick Johnson, MS
Systems Manager, Vital Records/Public Health Statistics

Lei Zhang, PhD, MBA
Director, Office of Health Data and Research

Mary Currier, MD, MPH
State Health Officer

Mississippi State Department of Health

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Introduction

The Mississippi State Department of Health (MSDH) has made infant mortality an agency priority. MSDH is dedicated to improving birth outcomes in the state by decreasing infant mortality. In 2009 (most current data available), the Mississippi infant mortality rate was 10.0 deaths per 1,000 live births. The Healthy People 2020 goal is to reduce U.S. infant mortality rate to 6.0 deaths per 1,000 live births. To reach the 2020 goal, a reduction of 4.0 deaths per 1,000 live births over the next ten years poses a tremendous challenge.

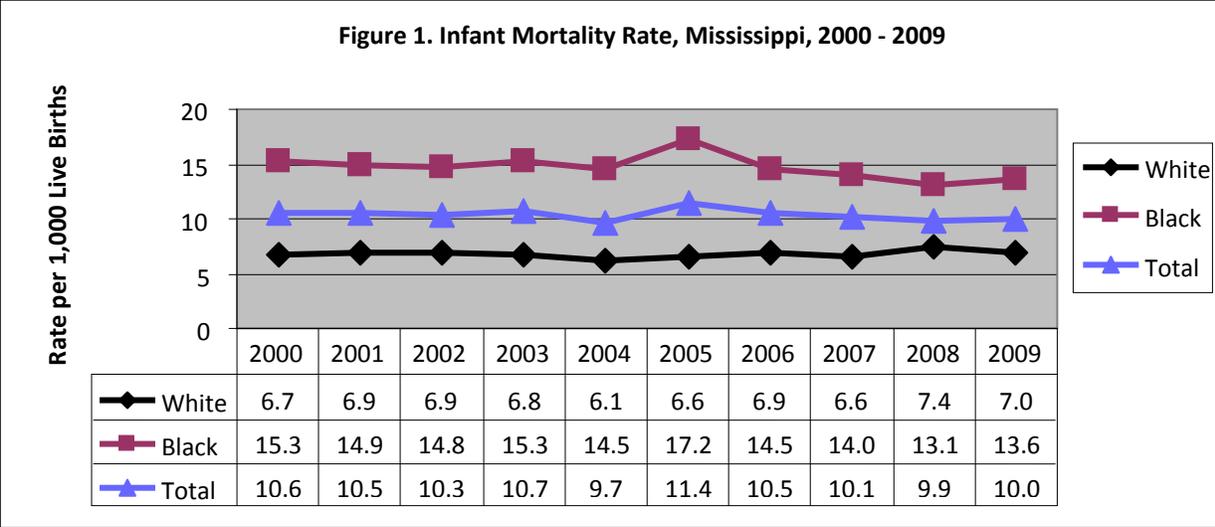
This report describes the pattern of infant mortality, delineates contributing factors, outlines a work plan for reducing infant mortality, and discusses progress accomplished during the preceding year. The MSDH Vital Statistics and Pregnancy Risk Assessment Monitoring System (PRAMS) are the principal data sources.

Data Monitoring

The leading causes of infant mortality in Mississippi are low birth weight and premature birth, birth defects, followed by Sudden Unexpected Infant Death Syndrome, accidents, and maternal complications of pregnancy. Racial disparities, maternal health, and prenatal care access and utilization also impact infant mortality in Mississippi. The magnitude and significance of these factors' contribution to Mississippi infant mortality is demonstrated by the following statistics, underscoring the need to monitor these events closely and target interventions towards reducing them.

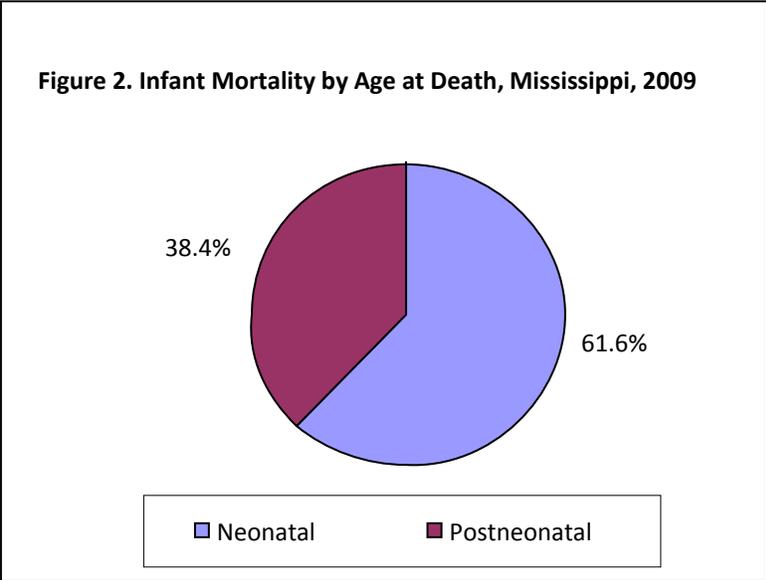
Infant mortality trend

The infant mortality rate for Mississippi has remained relatively unchanged from 2000 to 2009 (Figure 1). Over the past ten years, the rate of Mississippi infants dying in the first year of life ranged from a low of 9.7 deaths per 1,000 live births in 2004 to a high of 11.4 in 2005. On average, 451 infants died among approximately 43,553 births each year. During 2000-2009, the average infant mortality rate was 10.4 infant deaths per 1,000 live births. There were noteworthy differences on infant mortality rates between white- and black infants. The 10-year average infant mortality rate was 6.8 for whites and 14.7 for blacks, with a difference of 7.9 deaths per 1,000 live births.

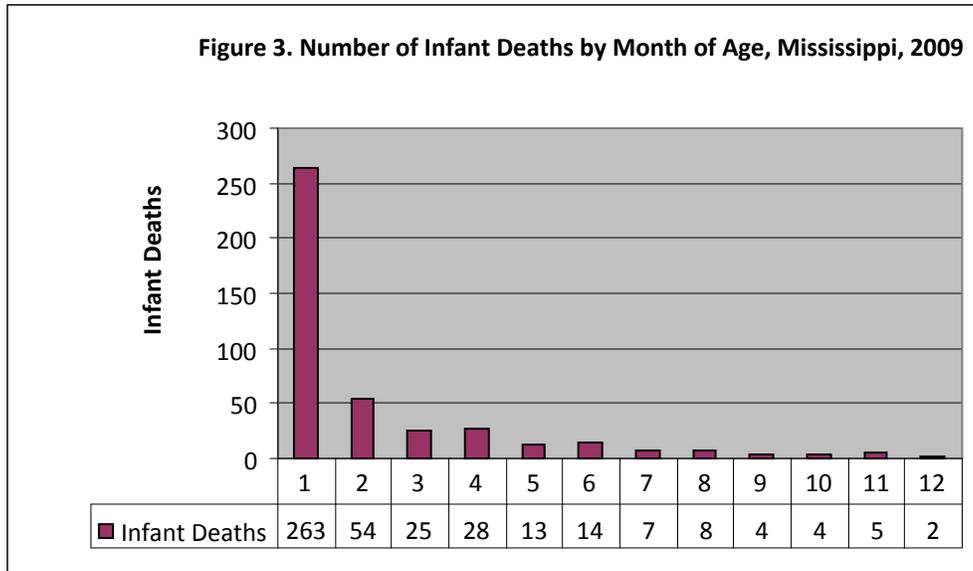


Infant mortality by period of death

In 2009, 61.6% of infant deaths occurred during the neonatal period, and 38.4% of infant deaths occurred during the postneonatal period (Figure 2). Neonatal deaths take place prior to the 28th day of life. Postneonatal deaths occur between the 28th day of life and the first birthday.

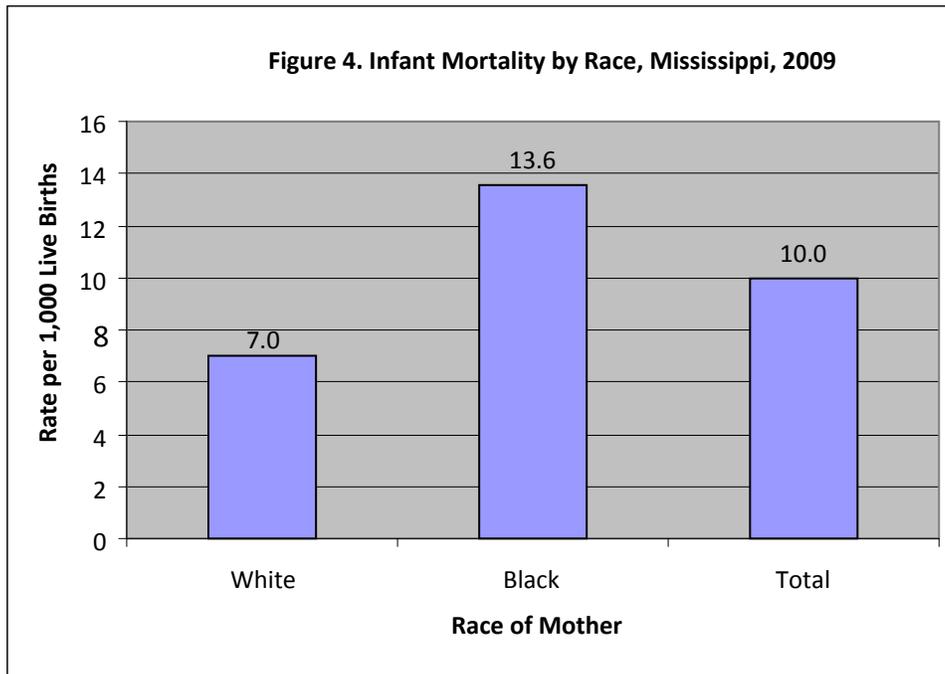


In 2009, infant age in months at the time of death demonstrated that 263 (61.6%) of 427 infant deaths took place during the neonatal period. In addition, 134 of 427 (31.4%) occurred when infants were 2- 6 months of age. The remaining 30 (7.0%) were sparsely spread across the 7th through 12th month of life (Figure 3).



Infant mortality by race

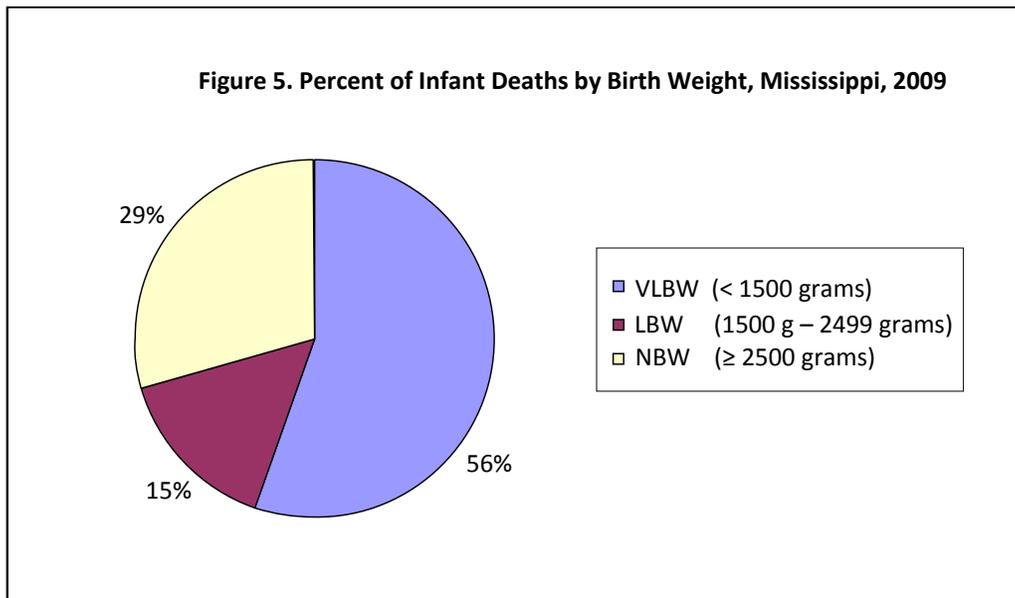
In 2009, the infant mortality rate for whites was 7.0 deaths per 1,000 live births compared to 13.6 for blacks (Figure 4). This racial disparity has persisted throughout the preceding decade.



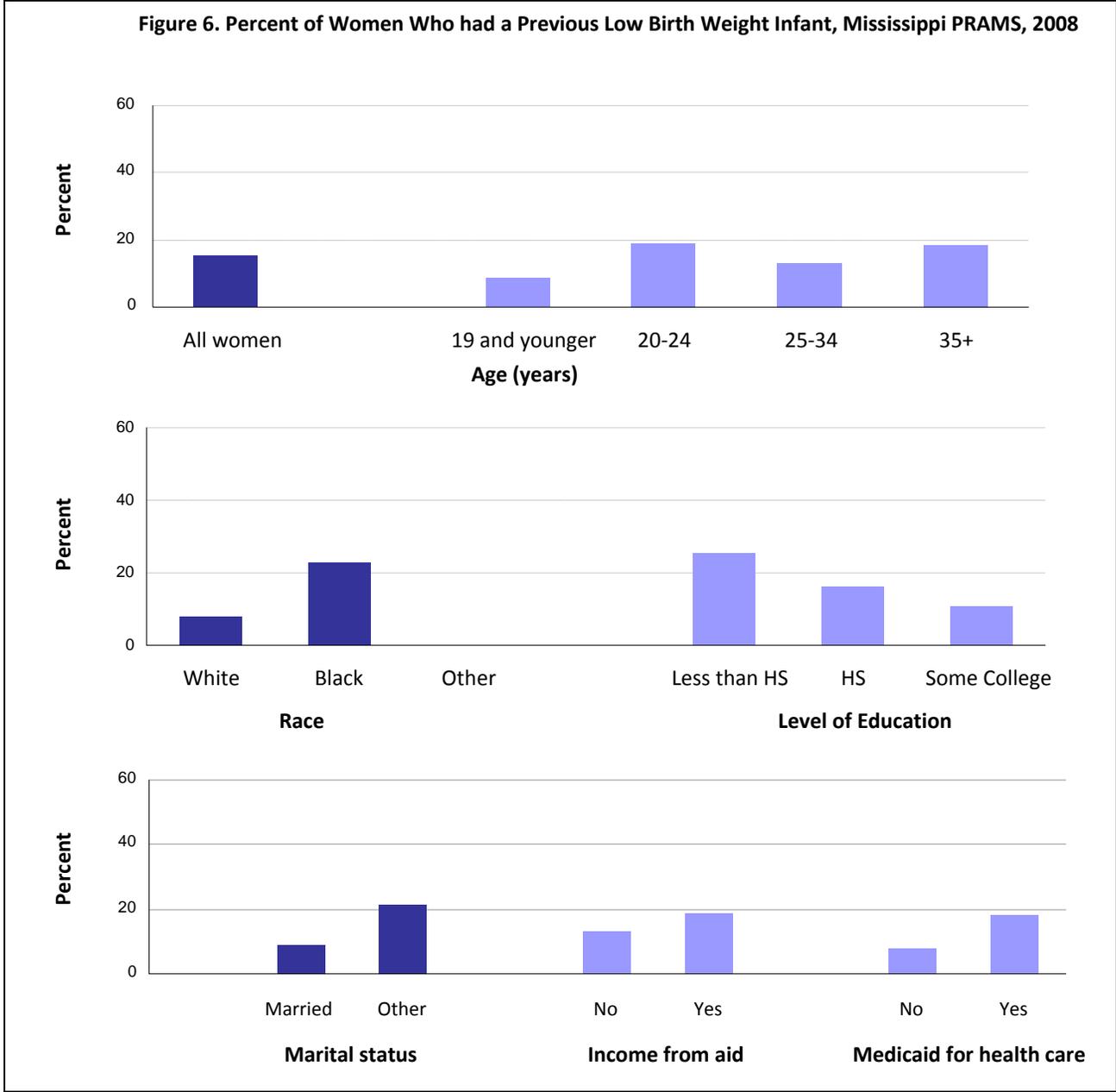
Infant mortality by birth weight

Infant deaths attributable to preterm birth (PTB, <37 weeks gestation) and low birth weight (LBW, < 2,500 grams) are leading causes of infant death in Mississippi. In 2009, the death rate among LBW infants (57.0 deaths per 1,000 live births) was about 17 times higher than among normal-birth-weight (NBW, \geq 2,500 grams) infants (3.3 deaths per 1,000 live births). The infant mortality rate for very-low-birth-weight (VLBW, < 1,500 grams) infants was 259.7 deaths per 1,000 live births, a significantly higher rate than other weight categories.

Seventy-one percent of infant deaths in 2009 occurred among infants weighing less than 2,500 grams. The majority of these infant deaths occurred among VLBW infants weighing less than 1,500 grams. Slightly less than one third (29%) of infant deaths occurred among infants with normal birth weights (Figure 5).

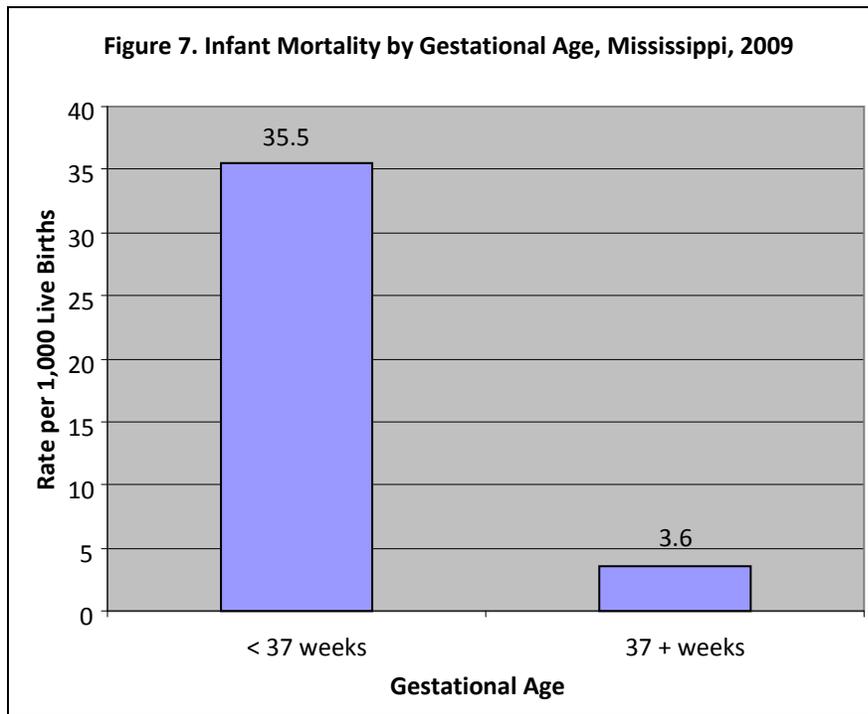


Based on the information from the 2008 Mississippi PRAMS survey, among women who had a previous live birth, 15.3% delivered a LBW infant. The prevalence of women who had a previous LBW infant was highest among those who were 35 years and older, black, unmarried, recipients of income from aid, and Medicaid recipients (Figure 6).



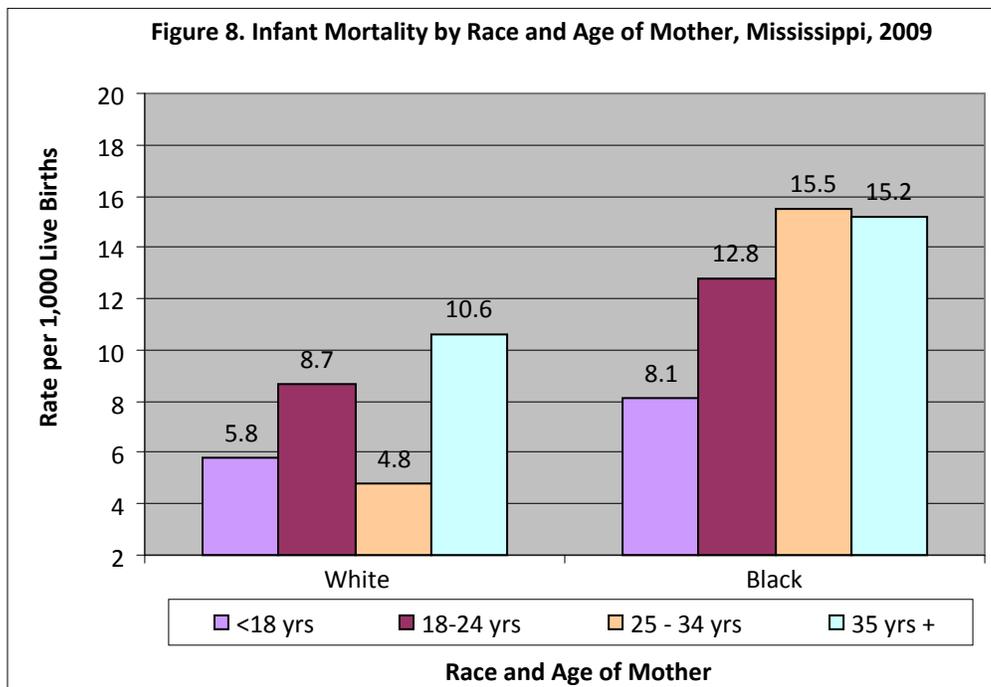
Infant mortality by gestational age

Overall, the infant mortality rate for babies born prematurely (< 37 weeks gestation) was about 10 times higher than those born at 37 weeks or more gestation (35.5 vs. 3.6 deaths per 1,000 live births) (Figure 7).



Infant mortality by mother’s age

In 2009, 5 white infants and 12 black infants born to teen mothers (less than 18 years of age) died. The lowest infant mortality rate (4.8 deaths per 1,000 live births) occurred among infants of white mothers aged 25-34 years. In 2009, the relative high infant mortality rate was among infants of older mothers aged 35 years or older regardless of race. Babies born to white mothers aged 25-34 years had the lowest infant mortality rate (Figure 8).

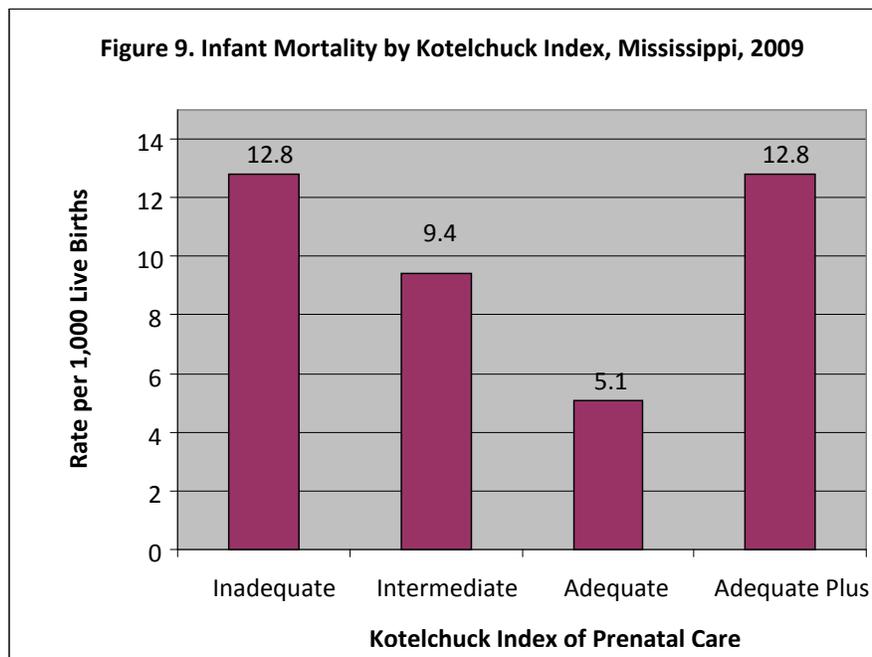


Infant mortality by Kotelchuck Index

The Kotelchuck Index classifies prenatal care into one of four categories by combining information about the timing of prenatal care, the number of prenatal care visits and the fetus' gestational age.

- Inadequate: Prenatal care began after the 4th month or less than 50% of recommended prenatal visits were received.
- Intermediate: Prenatal care began by the 4th month and 50%-79% of recommended prenatal visits were received.
- Adequate: Prenatal care began by the 4th month and 80%-109% of recommended prenatal visits were received.
- Adequate Plus: Prenatal care began by the 4th month and 110% or more of recommended prenatal visits were received.

In 2009, mothers who received “adequate” prenatal care had the lowest infant mortality rate compared to those who received “inadequate”, “intermediate”, and “adequate plus” prenatal care (Figure 9). “Adequate plus” care often reflects maternal or fetal health issues that require additional prenatal visits, thus women who receive this level of care may be at elevated risk of poor birth outcomes such as infant death.



Work Plan and Progress Report

Over the past several years, new studies and programs have been implemented to address maternal and infant health in Mississippi and staff have begun to better understand the challenges faced by Mississippi women and families.

Various studies (Graham, 2010; Graham et al, 2008; Graham et al, 2007; Greene et al, 2010; Langston et al, 2009; Northington et al, 2010a & 2010b; Rachel et al, 2008; and Zhang et al, 2010) have provided insight into factors contributing to Mississippi's historically high rates of infant mortality. Of greatest concern are the data indicating that many Mississippi women may not be physically, fiscally, socially, or educationally prepared for maternity and motherhood. These data, identified through many of the studies noted above, underscore the importance of increasing access to preconception (pre-pregnancy) care and treating women throughout their lifespan as well as recommending training for women's healthcare providers in recognizing and understanding the effects of chronic disease in women. Further, these studies document the need for preventive healthcare as a tool for reducing racial disparities in infant mortality. Generally speaking, healthier mothers have healthier babies. Thus, improving the health of mothers prior to pregnancy could improve outcomes for Mississippi infants and their families.

Modeling a program implemented in Georgia in 2006 (Dunlop et al, 2008), MSDH implemented pilot programs in two Mississippi communities in 2009 that focus on women who delivered a VLBW infant, which (as noted in the data portion of this report) annually contributes to more than half of Mississippi infant deaths. The communities currently include an expanded area of Metropolitan Jackson (Hinds County) and an 18 - county catchment area of the Mississippi Delta (Desoto, Tunica, Tate, Panola, Quitman, Coahoma, Tallahatchie, Bolivar, Sunflower, Carroll, Leflore, Washington, Humphreys, Holmes, Yazoo, Sharkey, Issaquena, and Warren Counties). These communities are predominantly African American with high rates of poverty. The communities have excessive rates of LBW or VLBW deliveries (and correspondingly higher infant mortality and morbidity) and low rates of health insurance coverage and access to primary care services. The combined Delta Infant Mortality Elimination (DIME) and Metropolitan Infant Mortality Elimination (MIME) components of the interpregnancy care project give varying perspectives – urban and rural – of implementing interpregnancy care in Mississippi. The DIME project is funded through the Delta Health Alliance. Alternative funding sources are being sought for the MIME.

The DIME and MIME projects have three aims for women who admit a VLBW infant into the University of Mississippi Medical Center (UMMC): (1) Improve overall health status, and reduce medical and social risks such as achievement of optimal child spacing (18 to 24 months)

through the provision of primary health care, social, and community outreach services; (2) Reduce subsequent poor pregnancy outcomes in enrolled high - risk women; (3) Share findings of infant mortality reduction programs with health care providers, policy makers, and central Mississippi community members in Mississippi. These projects are highly collaborative, incorporating partnerships and contractual agreements between the MSDH, UMMC, Healthy Linkages, federally qualified community health centers, the Division of Medicaid, and others. Since acquiring Institutional Review Board approval in February 2009, a total of 88 women (69 for DIME and 19 for MIME) have enrolled in the projects and case studies of success stories and challenges have begun to be documented. Evaluation is one of the key components of these pilot projects. Extensive evaluation activities are planned to assess both health and financial outcomes of the programs. If proven effective, MSDH plans to expand to other areas of the state upon availability of adequate funding.

Assessment of these programs' past year progress has suggested improved outcomes and achievement of adequate child spacing for some program participants. With these successes in mind, the MSDH has begun to implement expanded access to basic components of the interpregnancy care program in certain public health districts that have adequate resources to support the expansion. The expanded programs extend comprehensive case management services to high risk women who would not otherwise qualify for them which subsequently increases the opportunity to case manage high risk infants. Our vision for these programs is to empower more women with the knowledge and services needed to be more proactive in reproductive health decisions.

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Acknowledgements

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