



Department of Health and Mental Hygiene

PLAN FOR REDUCING INFANT MORTALITY IN MARYLAND

December 2011

Prepared by the Center for Maternal and Child Health, Family Health Administration

Executive Summary

Infant mortality rates in Maryland have historically been higher than the national rate and while Maryland's rates have improved overall in the past 50 years, they stalled over most of the last decade, and significant racial disparities persist. Infant mortality is an important indicator of the health of a community because of the many, complex factors associated with it, such as socio-economic status, environment, access to quality health care, diet, lifestyle, and health status before pregnancy. Governor Martin O'Malley has made reducing infant mortality and racial disparities in infant mortality one of the Administration's 15 strategic goals. As the lead State agency for this goal, the Department of Health and Mental Hygiene (DHMH) developed this comprehensive Plan to Reduce Infant Mortality, with input from stakeholders across Maryland, to provide a framework for Maryland's efforts to address this important and complex public health problem.

The goal of the Plan is to reduce the 2010 overall infant mortality rate of 6.7 infant deaths/1,000 live births to 6.5/1,000 live births, by 2012, through a reduction in the Black infant mortality rate of 4.2%, from 11.8/1,000 live births in 2010 to 11.3/1,000 in 2012. This will be accomplished by working with partners across the State to implement evidence-based practices and prioritize risk factors identified by the Infant Mortality Epidemiology Work Group, convened in 2011 by DHMH to examine the issue of infant mortality in Maryland. Priority risk factors include chronic health conditions before and during pregnancy, infant sleep position, the timing and effectiveness of risk-targeted prenatal care, and prior pre-term birth, among others.

Baltimore City, Prince George's County, and Somerset County were the initial target areas for implementation of the Plan. Dorchester County was added as of July 2011. These jurisdictions were selected due to their high infant mortality rates and high racial disparities in infant mortality. With time, the comprehensive services and outreach efforts developed in these jurisdictions will be expanded to other jurisdictions. DHMH will continue to develop and strengthen partnerships as these efforts are expanded across the State.

Maryland's approach includes four key strategies: (1) real-time access to data from a variety of sources; (2) building on strengths and partnerships already working to improve infant mortality such as the Baltimore City Health Department's "Strategy to Improve Birth Outcomes" and the Prince George's Health Department's "Healthy Women, Healthy Lives Program;" (3) taking a comprehensive, systems approach; and (4) developing and strengthening culturally-competent outreach, education and care coordination efforts in the community to more effectively target hard-to-reach families.

Proven interventions, implemented in the target jurisdictions, will be concentrated at different points along the life span:

- Before pregnancy:
 - expand family planning clinic sites to become Comprehensive Women's Health Centers;
 - work closely with Federally Qualified Health Centers (FQHCs) to integrate reproductive life planning into their primary care services; and

- expand eligibility for Medicaid family planning services to include all women at or below 200% of federal poverty level, to begin January 1, 2012.
- During pregnancy:
 - expedite Medicaid eligibility process for pregnant women;
 - develop Quick Start Prenatal Programs at Local Health Departments; and
 - collaborate with home visiting programs and managed care organizations to expand access to case management during pregnancy.
- After delivery:
 - work with hospitals, community service providers, home visiting programs and Local Health Departments to increase referrals for community prevention services;
 - collaborate with Maryland hospitals and the Maryland Patient Safety Center to develop a standardized postpartum discharge process; and
 - review hospital compliance with the Maryland Perinatal Standards through hospital site visits, to be completed by June 30, 2012.

To track Maryland's progress, data are collected from target jurisdictions and reported to StateStat and the Governor's Delivery Unit on a monthly basis. Health outcomes at the State and jurisdiction levels are assessed annually through analysis of Vital Statistics, Title X, Medicaid and PRAMS (Pregnancy Risk Assessment Monitoring System) data.

Introduction

Infant mortality is a critically important indicator of the overall health of a population because it is linked to many complex factors, such as the mother's overall health, socio-economic risks, environment, lifestyle, diet, and access to quality health care (CDC 2011). Infant mortality rates (IMR) in the US and Maryland have improved overall in the past 50 years, but they stalled over most of the last decade, and significant racial disparities persist. The average rate for Whites in Maryland has declined significantly since 2000, but the average rate for Blacks fell only slightly, resulting in a Black to White infant mortality ratio of 2.9 in 2010 ("Infant Mortality in Maryland, 2010," Maryland Vital Statistics).

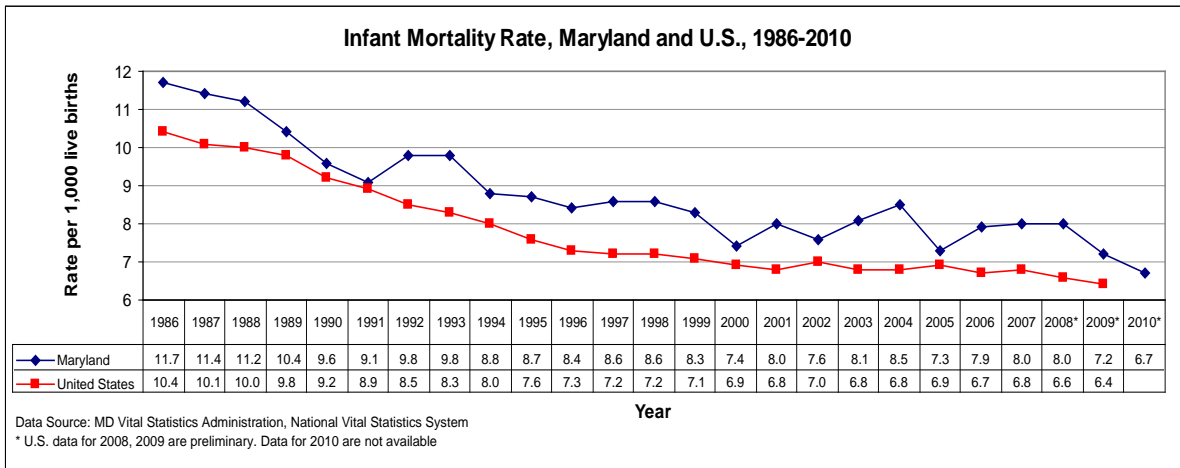
Governor Martin O'Malley has made reducing infant mortality and racial disparities in infant mortality one of the Administration's 15 strategic goals. Progress towards this goal is being tracked by the Governor's Delivery Unit (<http://www.statestat.maryland.gov/gdu.asp>). As the lead State agency for this goal, the Department of Health and Mental Hygiene (DHMH) developed this comprehensive Plan that addresses the many factors related to infant mortality and uses evidence-based approaches. DHMH employed several strategies during 2011 to obtain broad and substantive input regarding the Plan. Recommendations obtained through this process are incorporated into this Updated Plan for Reducing Infant Mortality (see Appendix A for a more detailed summary of findings). The public input process included the following:

- The Infant Mortality Breakout Session at the Governor's Forum on Children and Health in January 2011 (see Appendix B);
- A meeting with pediatricians from across central Maryland entitled, "The Role of Community Pediatricians in Preventing Infant Mortality" (see Appendix C);
- A web-based survey completed by 339 Marylanders (see Appendix D); and
- The Maryland Infant Mortality Epidemiology Work Group, which provided a summary of the latest research on infant mortality and recommendations for reducing infant mortality in Maryland (see their report on-line: http://dhmh.maryland.gov/babiesbornhealthy/pdf/updates/IM_Epi_Work_Group_%20Report_Final_Aug_24_2011.pdf).

Background

The infant mortality rate is the number of deaths per 1,000 live births among infants under one year of age. Maryland's overall IMR has historically been higher than the national rate (Figure 1) ("Infant Mortality in Maryland, 2010," Maryland Vital Statistics). In 2009, the most recent year for which preliminary national data are available, the overall IMR for the United States was 6.4 deaths/1,000 live births and Maryland's IMR was 7.2/1,000. The Healthy People 2020 national goal is an IMR of 6.0/1,000 live births (DHHS 2010). Maryland's IMR dropped 10% between 2008 and 2009 (from 8.0/1,000 live births to 7.2), and dropped another 7% between 2009 and 2010 to the lowest rate ever recorded in Maryland, 6.7/1,000 live births. Thus, a total of 496 infants died in 2010 compared with 541 infants in 2009 and 617 in 2008 ("Infant Mortality in Maryland, 2010," Maryland Vital Statistics).

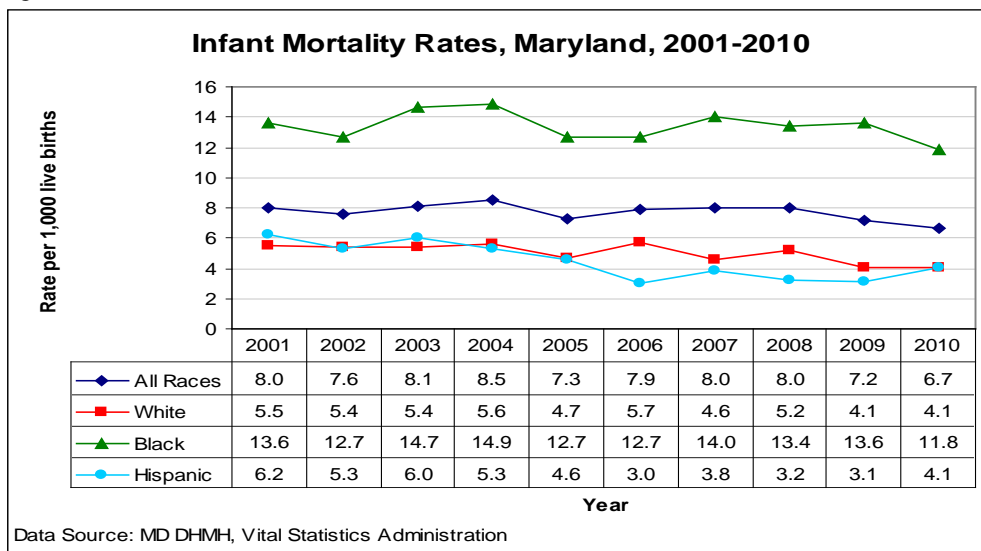
Figure 1



Disparities by Racial/Ethnic Group

Maryland’s high infant mortality rates have been due in large part to the high rates among Blacks, who represent a larger proportion of residents in Maryland than in the US as a whole. According to the Maryland Vital Statistics report, “Infant Mortality in Maryland, 2010,” the 496 infant deaths in Maryland in 2010 included 178 deaths among infants born to White women, 295 among infants born to Black women, 17 among infants born to Asian women, and 42 among infants born to Hispanic women. Maryland’s overall decline in infant mortality between 2008 and 2009 was due to a 20.6% decline in infant mortality rates among White women (from 5.2/1,000 births in 2008 to 4.1 in 2009) (Figure 2). The Black infant mortality rate increased over that same time period from 13.4/1,000 live births to 13.6. The decline between 2009 and 2010, however, was due to a 13% decline in the Black infant mortality rate (from 13.6/1,000 live births to 11.8) while the White infant mortality rate remained unchanged at 4.1/1,000 live births. The infant mortality rate was 3.2/1,000 live births among Asians in both 2009 and 2010, and increased among Hispanics from 3.1/1,000 live births in 2009 to 4.1 in 2010 (“Infant Mortality in Maryland, 2010,” Infant Mortality in Maryland, 2009,” Maryland Vital Statistics).

Figure 2

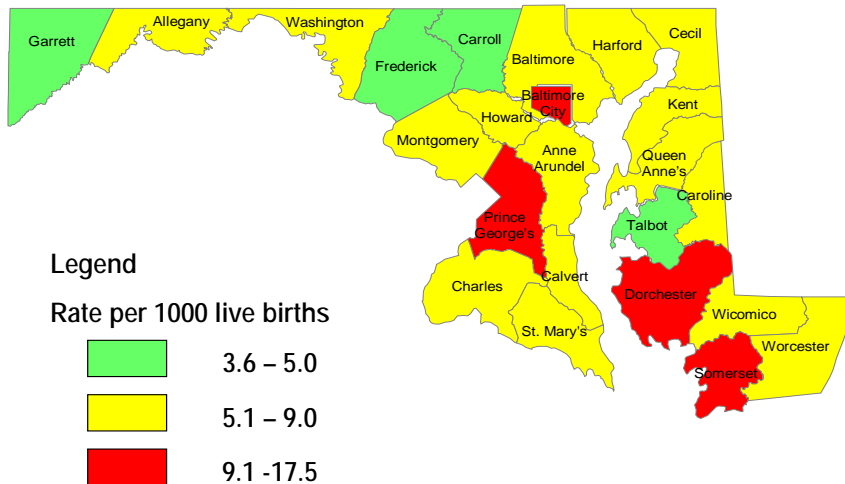


Geographic Disparities

Maryland jurisdictions with the worst infant mortality rates between 2006 and 2010 are Dorchester County (17.5/1,000), Baltimore City (12.1/1,000), Prince George’s County (9.8/1,000) and Somerset County (9.1/1,000) (Figure 3). The National Capital Area (Montgomery and Prince George’s Counties) and Garrett County experienced statistically significant decreases in infant mortality rates between the periods of 2001 – 2005 and 2006 – 2010, while Dorchester County experienced a statistically significant increase (Table 1). Washington, Harford, and Caroline Counties experienced increases of 20% or more in their infant mortality rates between the same periods but these increases were not statistically significant. Maryland’s overall infant mortality rate improved by 4.1% during these same periods, but this improvement was not statistically significant (“Infant Mortality in Maryland, 2010,” Maryland Vital Statistics).

Figure 3

Geographic Disparity in Maryland Average Infant Mortality Rate, By Jurisdiction, 2006-10



Data Source: MD Vital Statistics Administration 2011

Table 1.

Number of Infant Deaths, Average Infant Mortality Rate by Five Year Interval and Percent Change in Rates Between Intervals by Region and Political Subdivision

Region and political subdivision	Number of infant deaths		Average infant mortality rate*		Percent change**
	2001-2005	2006-2010	2001-2005	2006-2010	
Maryland	2930	2891	7.9	7.6	-4.1
Northwest Area	170	160	6.0	5.5	-8.3
Garrett	16	6	10.0	4.1	-59.3 ***
Allegany	32	23	9.5	6.4	-32.1
Washington	43	60	5.1	6.5	28.0
Frederick	79	71	5.3	4.8	-9.6
Baltimore Metro Area	1359	1382	8.1	7.9	-1.8
Baltimore City	542	579	11.9	12.1	1.4
Baltimore County	373	358	8.0	7.1	-10.8
Anne Arundel	229	231	6.7	6.5	-3.2
Carroll	38	38	3.9	4.4	11.3
Howard	112	93	6.4	5.5	-14.6
Harford	65	83	4.4	5.7	28.0
National Capital Area	1084	1002	8.4	7.7	-8.8 ***
Montgomery	405	387	6.1	5.7	-6.1
Prince George's	679	615	10.9	9.8	-10.1
Southern Area	147	155	7.0	7.2	2.1
Calvert	26	26	5.2	5.5	5.4
Charles	71	75	7.8	7.9	1.3
St. Mary's	50	54	7.4	7.4	0.0
Eastern Shore Area	170	192	7.0	7.3	5.0
Cecil	33	32	5.5	5.1	-8.3
Kent	10	5	11.8	5.3	-54.1
Queen Anne's	14	14	5.5	5.4	-2.4
Caroline	9	18	4.3	7.8	79.8
Talbot	7	8	3.9	4.4	11.8
Dorchester	15	36	8.9	17.5	95.9 ***
Wicomico	48	52	8.2	7.9	-3.9
Somerset	18	12	13.9	9.1	-34.9
Worcester	16	15	6.7	6.5	-3.6

*Per 1000 live births.

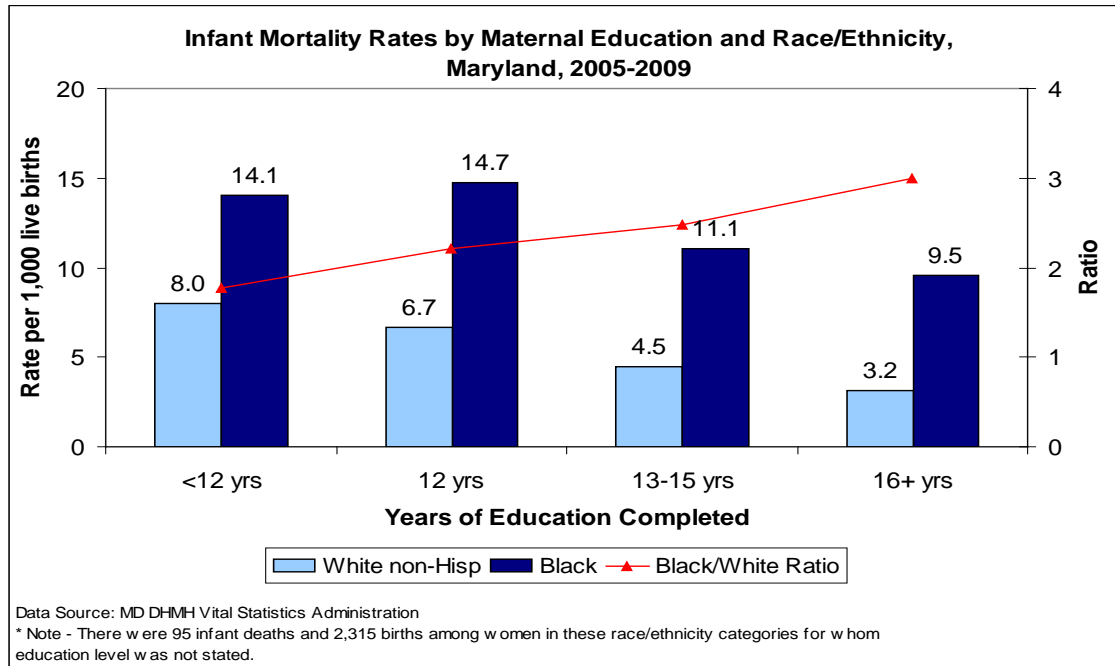
**Percent change is based on the exact rates and not the rounded rates presented here.

***Rates for 2001-2005 and 2006-2010 differ significantly ($p < .05$).

Disparities by Socioeconomic Status

Socioeconomic status (often measured in terms of education level, household income, or job status) has long been associated with birth outcomes, including infant mortality (Behrman and Butler 2007). In most studies, however, the differences detected in infant mortality rates between White and Black women persist after adjusting for socioeconomic status, suggesting the complexity of risk for infant mortality (Behrman and Butler 2007, CDC 2011). For example, analysis of data from the National Center for Health Statistics (NCHS) from 1998 – 2000 found that college-educated Black women have worse pregnancy outcomes than women of other races/ethnicities (White, Hispanic, and Asian) with less than an 8th grade education (Behrman and Butler 2007). In Maryland also, higher levels of maternal education were associated with lower infant mortality rates, but the ratio of Black to White infant deaths increased with increasing levels of maternal education (Figure 4) (Maryland DHMH Vital Statistics Administration).

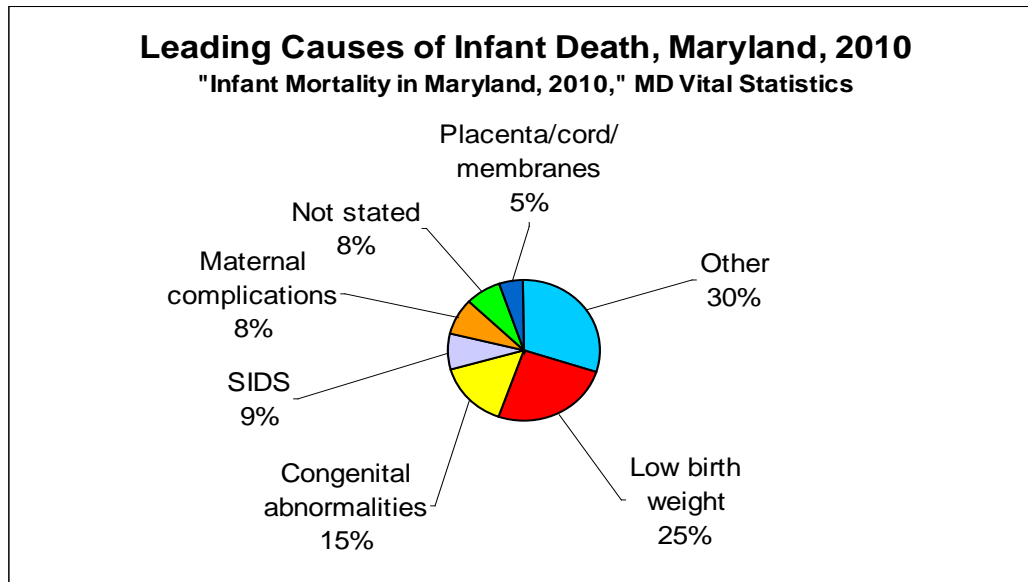
Figure 4.



Leading Causes of Infant Mortality in Maryland

The leading causes of infant mortality in Maryland in 2010 were preterm (< 37 weeks gestation)/low birth weight (LBW, <2500g) births, congenital abnormalities, and sudden infant death syndrome (SIDS), with preterm/LBW births associated with one in four infant deaths (Figure 5) (“Infant Mortality in Maryland, 2010,” Maryland Vital Statistics). Among White infants, the three leading causes of death in 2010, in rank order, were congenital abnormalities, LBW, and maternal complications of pregnancy. Among Black infants, LBW, congenital abnormalities, and SIDS were the three leading causes of death (“Infant Mortality in Maryland, 2010,” Maryland Vital Statistics). Nationally, the infant mortality rate for very low birth weight infants (VLBW) (< 1,500g) is 240/1,000 live births, more than 100 times the mortality rate for normal birth weight infants (NVS 2010).

Figure 5



The drop in Maryland's infant mortality rate in 2009 appears to have been due in large part to the 8.6% drop in the percentage of White infants weighing less than 1,500 grams (and the 28% drop in White infants weighing less than 500 grams). The percentage of Black infants weighing less than 1,500 grams dropped less than 1%, however, and the percentage of Black infants weighing less than 500 grams increased by 16%. Declines in other risk groups, such as multiple gestation pregnancies, pregnancies among teens under age 18 and women over age 20 with less than a high school education, are also likely to have contributed to Maryland's improved infant mortality rate in 2009 ("Infant Mortality in Maryland, 2009," Maryland Vital Statistics). From 2009 to 2010, the overall percentage of LBW infants dropped from 9.2% to 8.8%, the lowest rate since 2000. Among Blacks, the percentage of LBW infants dropped from 13% to 12% between 2009 and 2010, and among Whites, the rate decreased only slightly, from 7% to 6.9% ("Infant Mortality in Maryland, 2010," Maryland Vital Statistics).

The number of SIDS deaths decreased from 61 in 2009 to 43 in 2010, and decreased from 2009 to 2010 among both Black and White infants ("Infant Mortality in Maryland, 2010," Maryland Vital Statistics). Maryland PRAMS data (2009) demonstrate a continued need for SIDS prevention interventions. The percentage of non-Hispanic Black mothers not placing their infants to sleep on their backs is more than double that of non-Hispanic White mothers (41% versus 17%), while 23% of Asian mothers and 25% of Hispanic mothers reported that they did not place their infants to sleep on their backs. Co-sleeping is common, reported 'always' or 'often' by 30% of Black mothers, 55% of Asian mothers and 20% of Hispanic mothers. Postpartum tobacco use increased among Black mothers from 12% in 2005 – 2008 to 14% in 2009 and was reported by 18% of White mothers in 2009, down only slightly from 19% between 2005 and 2008.

Risk Factors for Infant Mortality

Risk factors for infant mortality are multiple, and include behavioral and environmental risks, health care risks, and socio-demographic risks (Behrman and Butler 2007). Behavioral risks

such as unintended pregnancy have been found to increase neonatal mortality more than two-fold (Bustan and Coker 1994). Data (MD PRAMS 2009) suggest that 45% of pregnancies in Maryland are unintended (Figure 6). Health care risks such as late prenatal care (3rd trimester versus 1st) have been demonstrated to more than double the risk of infant mortality (Figure 7) (“Infant Mortality in Maryland, 2010,” Maryland Vital Statistics). Infant mortality rates are also higher among infants born to adolescents, unmarried mothers, and smokers (CDC 2011). A mother’s health, long before conception, also affects the health of her baby. Factors such as maternal weight, chronic disease (such as hypertension, diabetes, heart disease, and asthma), nutrition status, substance abuse, sexually transmitted diseases, and stress have all been associated with birth outcomes (Williamson et al. 2008, Goldenberg and Culhane 2007, CDC 2006).

Figure 6

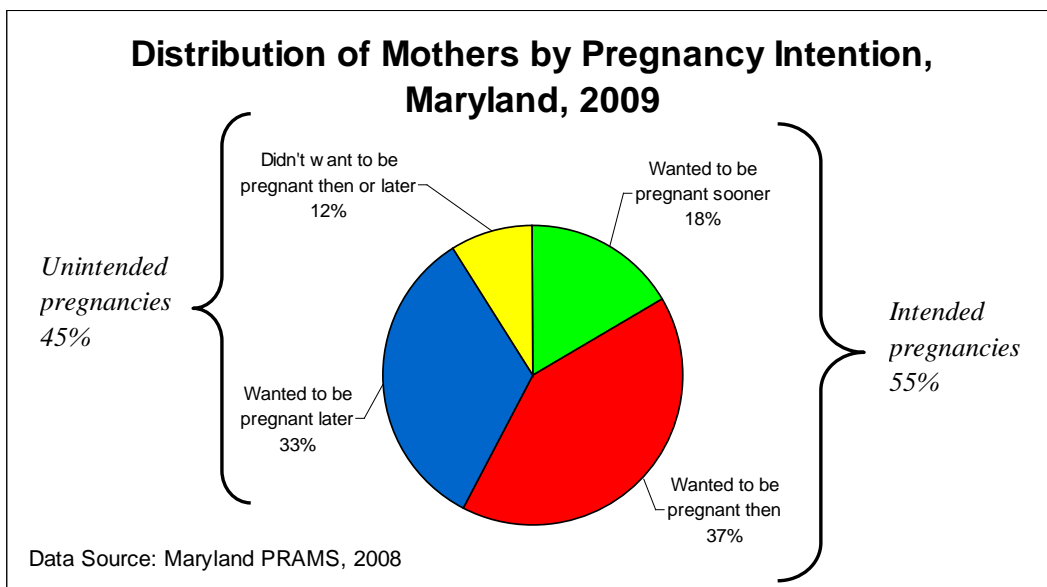
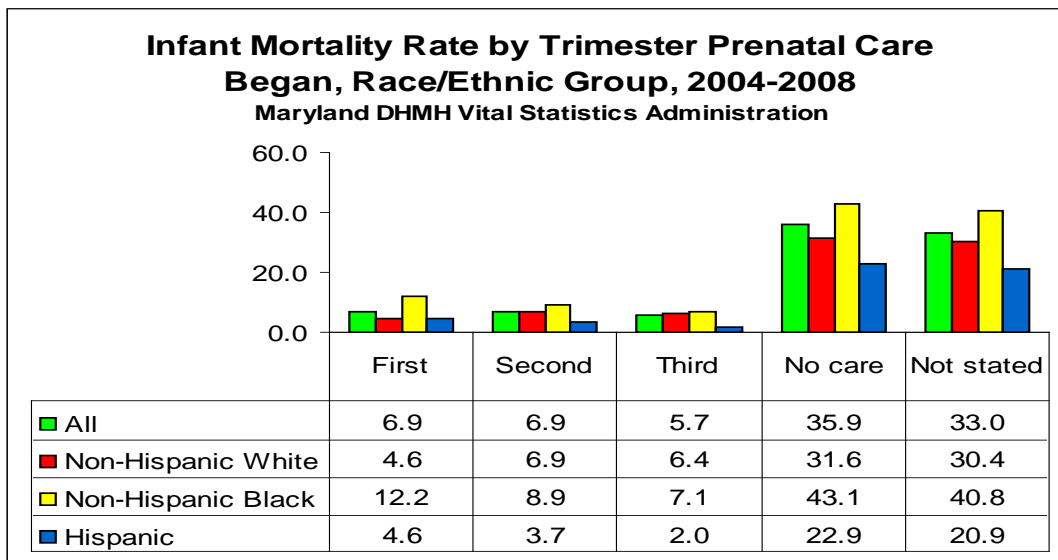


Figure 7



Costs

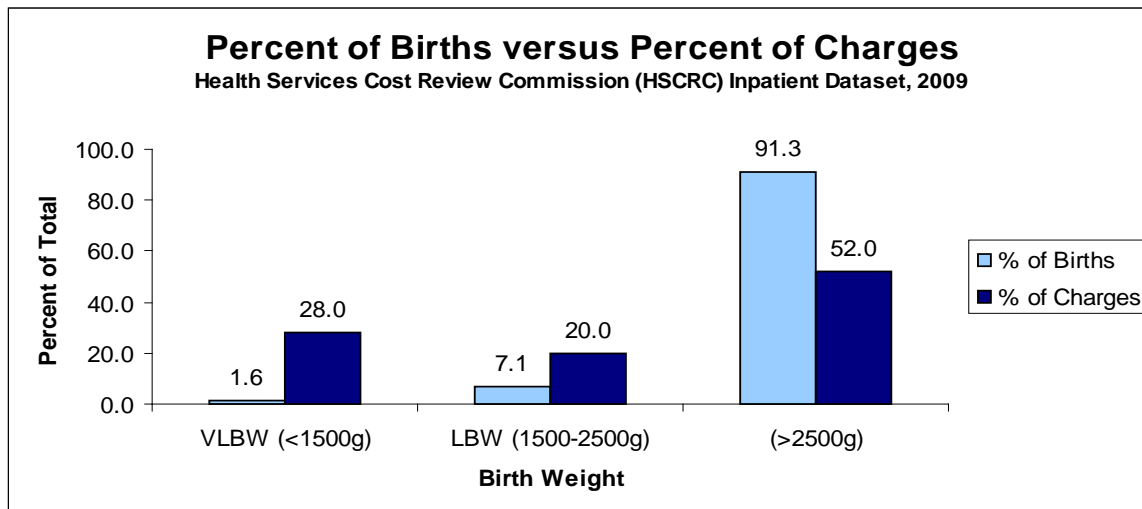
The economic costs of preterm/low birth weight births are high. Annual costs associated with US preterm births were estimated at \$26.2 billion in 2005, or \$51,600 per infant. Medical care services contributed \$16.9 billion (\$33,200 per infant) and maternal delivery costs contributed \$1.9 billion, or \$3,800 per infant (Behrman and Butler 2007). Beyond medical costs associated with delivery and initial hospitalization, however, are the extraordinary costs of managing the medical, educational, and social needs of low birth weight infants who may develop neuro-developmental problems or chronic diseases. Early intervention services were estimated to contribute \$611 million (\$1,200 per infant) in 2005, special education services added \$1.1 billion (\$2,200 per infant), and lost household and labor market productivity contributed \$5.7 billion (\$11,200 per infant) (Behrman and Butler 2007). Additional costs of preterm/low birth weight infants include outcomes in adulthood associated with low birth weight, such as heart disease, obesity, hypertension, and type II diabetes (Thompson 2007). These costs are not estimated here.

Maryland hospital data for 2009 (MD HSCRC) show an average length of stay of 34 days for VLBW babies (<1500g) at an average cost of \$72,379 per Medicaid birth compared to 3 days for babies of normal weight (>2500g) at an average cost of \$2,445 per Medicaid birth (Table 2). Further, VLBW births, while representing only 1.6% of births statewide in 2009, represented 28% of birth-related charges (Figure 8). In comparison, babies of normal weight constituted 91.3% of births but only 52% of charges. Medicaid paid for 55% of VLBW charges, 50% of LBW charges (MD HSCRC 2009) and 38% of preterm birth charges in Maryland in 2009 (“Infant Mortality in Maryland, 2009,” Maryland Vital Statistics).

Table 2

Average Charge for Births by Birth Weight, Payor Type (MD residents born at MD Hospitals), MD, 2009					
Data Source: HSCRC Inpatient dataset, 2009					
	Medicaid	Private Insurance	Self-Pay	Other	Total
VLBW (<1500g)	\$72,379	\$72,000	\$27,624	\$67,942	\$239,945
LBW (<2500g)	\$11,210	\$12,049	\$10,745	\$11,539	\$45,543
(>2500g)	\$2,445	\$2,245	\$1,956	\$2,057	\$8,703

Figure 8



Goal

The Governor's original goal was a 10% reduction in infant mortality by 2012 from the 2007 rate of 8.0/1,000 live births (the US Department of Health and Human Services Healthy People 2020 national goal is a 10% reduction from 2006 rates by 2020). This goal was attained by 2009, when Maryland's infant mortality rate fell 10% to 7.2/1,000 live births (MD Vital Statistics 2010). In 2010, the overall infant mortality dropped another 7%, to 6.7/1,000 live births (MD Vital Statistics 2011). Thus, the goal for infant mortality has been reset, with a new goal of reducing the overall infant mortality rate of 6.7 infant deaths/1,000 live births to 6.5/1,000 live births by 2012 through a reduction in the Black infant mortality rate by 4.2%, from 11.8/1,000 live births in 2010 to 11.3/1,000 in 2012.

- 2007 baseline – 622 total deaths, rate of 8.0/1,000
 - Black infant baseline – 369 deaths, rate of 14.0/1,000 births
- 2009 – 541 total deaths, rate of 7.2/1,000
 - Black infant status – 343 deaths, rate of 13.6/1,000 births
- 2010 – 496 total deaths, rate of 6.7/1,000 births
 - Black infant status – 295 deaths, rate of 11.8/1,000 births
- **2012 Goal – 483 total deaths, rate of 6.5/1,000**
 - **Black infant goal – 282 deaths, rate of 11.3/1,000 births**

Successful Approaches to Improving Pregnancy Outcomes

Guidelines developed by the Centers for Disease Control and Prevention (CDC 2006) for preconception and interconception care emphasize a comprehensive approach to women's health that includes risk assessment, education, and counseling to all women of childbearing age as a part of primary care visits in order to reduce reproductive risks and improve pregnancy outcomes. Routine risk assessment through screening (and intervention where appropriate) is recommended to include: reproductive history, environmental hazards, medications, family history, family planning, chronic disease, infectious disease and immunization, prenatal care, HIV testing and counseling, weight reduction, nutrition, smoking cessation, social and mental health (depression, social support, domestic violence, and housing), and substance use (CDC 2006, Wilensky and Proser 2008).

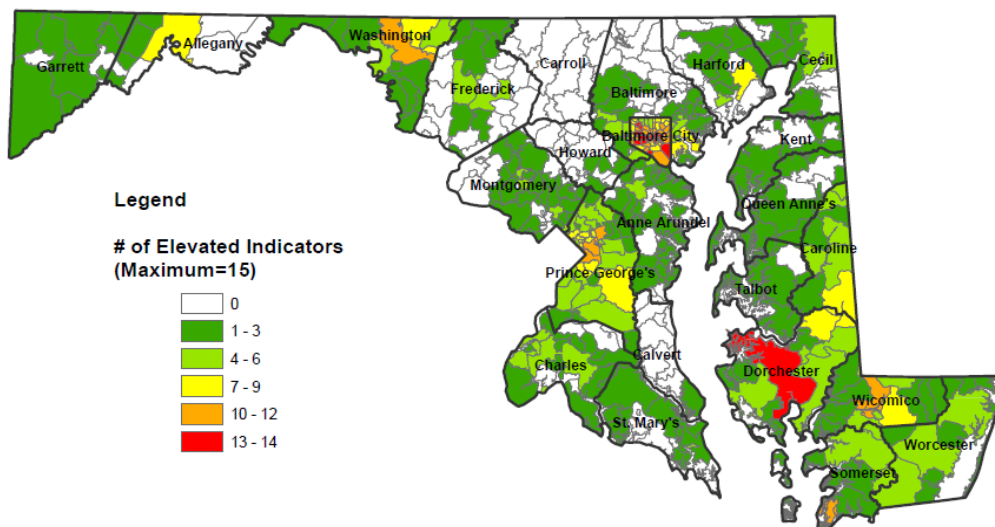
A comprehensive approach to women's health is designed to address the limitations associated with viewing preconception, prenatal and interconception care as distinct entities targeting identifiable groups of women (Wise 2008). Effective preconception care, for example, requires that pregnancies are planned; prenatal care cannot ensure that women arrive at pregnancy in good health (Misra and Grason 2006); and interconception care is sensible only when women anticipate having another child within a relatively short time period (Wise 2008). A comprehensive approach that addresses women's health regardless of pregnancy status has been described as an effective strategy for improving birth outcomes by serving women across their lifespan and at various levels of risk (Wise 2008, CDC 2006). Further, it enables the provision of preconception care to the large group of women not expecting to become pregnant, and interconception care to reproductive age women who may or may not go on to have another child (Wise 2008).

Breastfeeding has also been shown to reduce mortality in infants and young children (Bhutta et al. 2008) and safe sleep practices have been associated with a significant decline in infant deaths (Willinger et al. 1998). Home visiting programs have been demonstrated to reduce low birthweight and infant deaths and facilitate access to at-risk populations (Donovan et al. 2007, Moreno et al. 2000). Finally, the quality and type of perinatal care is important for pregnancy outcomes. VLBW infants should be born at the appropriate birthing hospital, which in Maryland is a level III Perinatal Referral Center (versus a level I or level II birthing hospital). Birth of VLBW babies at a non-level III hospital adds to the risk of infant death. The infant mortality rate is also higher for infants delivered at 37-38 weeks gestation compared to 39-41 weeks. Thus, elective deliveries occurring before 39 weeks gestation should be prohibited (“Findings from Data Analysis and Overall Recommendations,” Maryland Infant Mortality Epidemiology Work Group, 2011).

Maryland’s At-Risk Communities

A statewide needs assessment completed in September 2010 (MD DHMH) identified 46 communities in six jurisdictions with elevated risk (defined as substantially greater than the state average) in at least 10 of 14 specific indicators (Figure 9). Indicators included infant deaths, late (3rd trimester) or no prenatal care, low birth weight, preterm births, births to adolescents, families below poverty, Medicaid enrollment, WIC participation, unemployment, crime, child abuse and neglect, protective and peace order filings, substance abuse treatment, high school drop out, and kindergartners entering school ready to learn. Baltimore City, Dorchester, Prince George’s and Somerset Counties (the jurisdictions with the highest infant mortality rates) were among the 6 jurisdictions defined as “at-risk” through this assessment. Thus, Baltimore City, Prince George’s County, and Somerset County were the initial target areas for implementation of the Plan. Dorchester County was added as of July 2011. With time, the comprehensive services and outreach efforts developed in these jurisdictions will be expanded to other jurisdictions in order to effect a comprehensive systems change throughout the State.

Figure 9
Number of Elevated Indicators by CSA (Baltimore City) or ZIP Code, Maryland



Maryland's Strategic Approach

Maryland's approach involves four key strategies:

- 1) Real-time access to data from birth records, death records, Pregnancy Risk Assessment forms, hospital and practice-specific outcomes, sleep-related deaths, Fetal and Infant Mortality Review, Child Fatality Review, and Managed Care Organizations, among others, to define at-risk groups and inform targeted intervention;
- 2) Building on strengths and partnerships such as on the good work currently taking place in the target jurisdictions, including the Baltimore City Health Department's "Strategy to Improve Birth Outcomes," Prince George's County Health Department's "Healthy Women, Healthy Lives Program," and the Somerset County Health Department's "Babies Born Healthy Program;"
- 3) Taking a comprehensive systems approach, demonstrated to improved patient health and healthcare quality (Chuang and Inder 2009)
- 4) Developing and strengthening culturally-competent outreach, education and care coordination efforts in the community to more effectively target hard-to-reach families and address minority health needs (such as Perinatal Navigators and other outreach workers who are currently being utilized in the high-risk jurisdictions to reach target populations and assist women in accessing services).

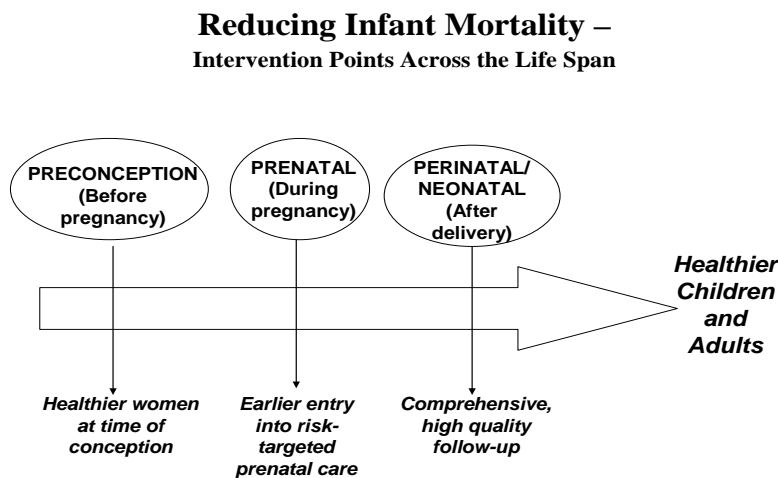
Community collaboratives such as the Improved Pregnancy Outcomes coalitions present in many jurisdictions will continue to be supported by DHMH and encouraged to serve as a key local entity accountable for local infant mortality outcomes. DHMH will also continue to encourage and support the use of the FIMR (Fetal and Infant Mortality Review) process in every jurisdiction. FIMR is a community process that continually assesses, monitors, and works to improve systems and resources for women, infants, and families. DHMH is collaborating with Maryland Med Chi and local health departments to plan a statewide FIMR database that is consistent across jurisdictions and integrated with the State Child Fatality Review system. Risk factors identified by the Infant Mortality Epidemiology Work Group will be prioritized for intervention ("Findings from Data Analysis and Overall Recommendations," Maryland Infant Mortality Epidemiology Work Group, 2011), including:

- Chronic conditions before and during pregnancy, notably hypertensive disorders during pregnancy, chronic hypertension before pregnancy, gestational diabetes, pre-pregnancy diabetes, heart disease, obesity, and asthma as well as tobacco use, binge drinking, intimate partner violence and depression
- Fertility treatment
- Infant sleep position, co-sleeping, and maternal postpartum tobacco use
- Timing and effectiveness of risk-targeted prenatal care
- Maternal age (teen pregnancy, particularly among Hispanic teens, and over age 35)
- Prior pre-term birth
- Birth hospital level of care for VLBW births
- Early term deliveries (37-38 weeks)

Proven interventions will be concentrated at different points along the life span (Figure 10):

- Before pregnancy – Preconception interventions to ensure healthier women at time of conception.
- During pregnancy – Prenatal interventions to ensure earlier entry into prenatal care.
- After delivery – Perinatal and neonatal interventions to ensure comprehensive, high quality follow up care.

Figure 10

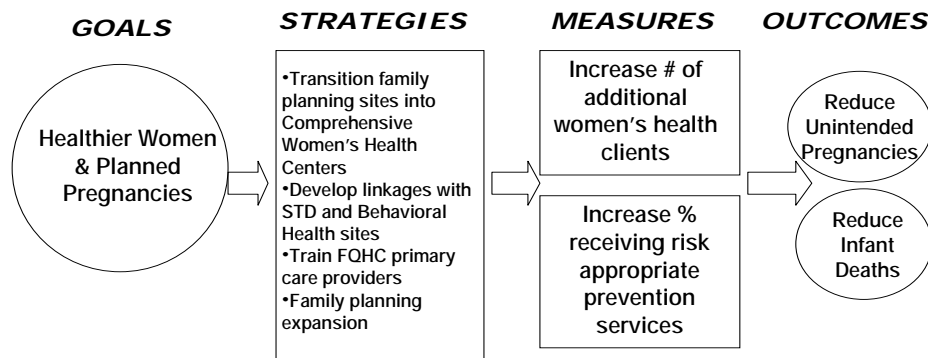


Strategy 1 – Before Pregnancy – Comprehensive Women’s Health Centers (Figure 11)

Given the multiple, complex factors contributing to infant mortality, interventions must begin before conception. The health of a woman at the time of conception can profoundly affect the outcome of that pregnancy. As family planning often serves as the entry point for women into the health care system, public health family planning clinic sites, in each of the three targeted jurisdictions, have expanded their scope of services to become Comprehensive Women’s Health Centers that address more than reproductive health needs. Expanded services include screening and referral for Medicaid eligibility, WIC nutrition, substance abuse treatment, mental health, domestic violence prevention, smoking cessation and weight management services. DHMH will also work closely with Federally Qualified Health Centers (FQHCs) to integrate reproductive life planning into their primary care services, including training their primary care providers through the Title X Family Planning program. Finally, as of January 1, 2012, Maryland will expand eligibility for family planning services under the Maryland Medical Assistance program to include all women at or below 200% of the federal poverty level.

Figure 11

Reducing Infant Mortality – Goal 1 Healthier Women & Planned Pregnancies



Strategy 2 – During Pregnancy – Earlier Entry into Risk-Targeted Prenatal Care (Figure 12)

Once pregnant, entry into early, risk-targeted prenatal care becomes critical. One strategy for early entry into prenatal care includes expediting Medical Assistance enrollment for the client in local health departments (LHD) and local Department of Social Services (DSS) sites. As of Dec. 1, 2009, Medicaid applications for pregnant women at local health departments and local Department of Social Services sites have been expedited through a process called “accelerated certification of eligibility,” or ACE. If an application can not be completed within 10 days, a pregnant woman is presumptively enrolled in Medicaid and provided up to 90 days of coverage while the full application is being processed. At time of enrollment, screening and referral for WIC nutrition, substance abuse treatment, mental health, domestic violence prevention, and smoking cessation services will be assured.

Once enrolled, assuring the availability of an obstetrical provider in a timely manner can be a challenge. The health department sites in the target jurisdictions have also implemented a *Quick Start* prenatal care program, which includes initial screening, counseling and referral services, and assistance in accessing ongoing prenatal care. These efforts serve as a stop-gap measure by ensuring immediate access to care while Medicaid eligibility and first prenatal care appointment are pending.

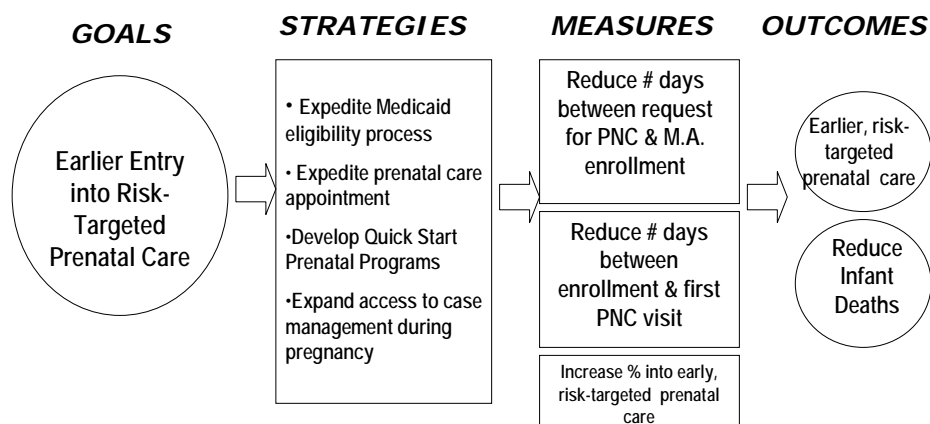
Increasing access to prenatal services in underserved areas is a key component of addressing infant mortality. Building partnerships with academic centers, community hospitals, local health departments, community health centers, professional organizations and other community-based organizations is essential to overcoming barriers to care. Through an innovative partnership between Prince George’s County Health Department, Prince George’s Hospital Center, and the University of Maryland School of Medicine, the “Tapestry Program” began providing comprehensive and cost effective prenatal care services in March 2010. Greater Baden Medical Services, a Federally Qualified Health Center, expanded services to include prenatal care at a Prince George’s County site in early 2011. Both of these programs have received grant support

from the Maryland Community Health Resources Commission and contribute to increased provider capacity in Prince George’s County.

Expanding access to meaningful case management services during pregnancy is another essential strategy. Under the Affordable Care Act, DHMH is working with the Governor’s Office for Children and several other State agencies and partner organizations to expand and implement evidence-based home visiting programs in at-risk communities across Maryland. DHMH will also partner with managed care organization (MCO) care coordinators to standardize priorities for case management.

Figure 12

Reducing Infant Mortality – Goal 2 Earlier Entry into Risk-Targeted Prenatal Care



Strategy 3 – After Delivery – More Comprehensive Follow Up Care (Figure 13)

After delivery, those women with poor pregnancy outcomes, such as preterm/very low birthweight births, must be identified and a coordinated effort made to ensure risk-appropriate follow up for both mother and infant. Hospitals, providers, local health departments, and other community groups must work together to ensure that high risk women and infants receive timely and appropriate services, including safe sleep instruction, breastfeeding support, mental health and substance abuse services, domestic violence support, smoking cessation services, family planning, and other services. DHMH is working with partners across Maryland (including community based organizations, hospitals, FQHCs, local health departments, and State agencies, among others) to promote safe sleep messages through distribution of thousands of “Sleep Safe. Alone. Back. Crib.” DVDs developed by Baltimore City’s B’more for Healthy Babies campaign.

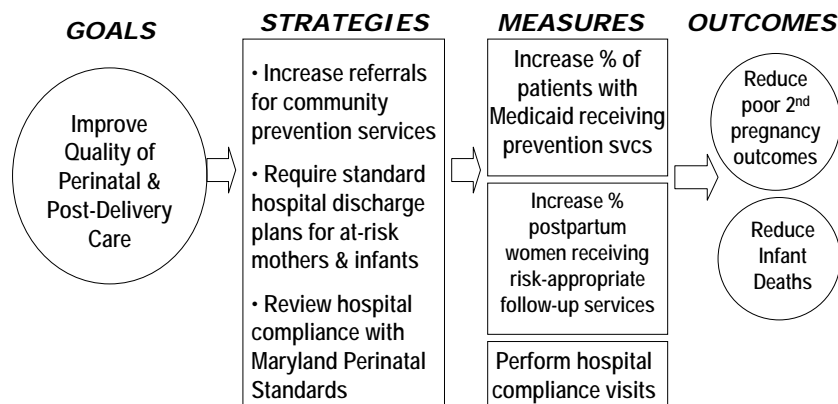
Building on the Maryland Perinatal System Standards (http://fha.maryland.gov/pdf/mch/perinatal_standards.pdf) and quality improvement work currently being done with the Maryland Institute for Emergency Medical Services Systems, Maryland Patient Safety Center, and all 34 birthing hospitals in Maryland, a standardized hospital postpartum discharge process is being developed. A standardized discharge referral form for high risk mothers and infants has been developed to streamline referral

to community-based services. Implementation of the form began April 1, 2011 in all Maryland birthing hospitals. The Maryland Patient Safety Center’s Perinatal and Neonatal Learning Networks have committed to work jointly on developing a standardized discharge process in collaboration with the Department.

The Morbidity, Mortality, and Quality Review Committee (MMQRC) is charged with monitoring compliance of level I and level II birthing hospitals with the Maryland Perinatal System Standards through review of information requests and by conducting on-site reviews. The Perinatal Standards address priority issues such as delivery of VLBW infants at level III birthing hospitals. Site visits are conducted every 5 years at all level III hospitals by the Maryland Institute for Emergency Medical Systems (MIEMS), and MMQRC visits to level I and II hospitals began in June 2011. The Department is also working to maximize risk-appropriate postpartum follow-up services through referral to and coordination with home-visiting programs awarded through the Affordable Care Act.

Figure 13

**Reducing Infant Mortality – Goal 3
Improve Quality of Perinatal & Post-Delivery Care**



Oversight and Evaluation

A performance measurement system for each section of the Plan has been developed by DHMH in collaboration with the Governor’s Delivery Unit (GDU) and StateStat. Program data are collected from target jurisdictions and reported to StateStat and GDU on a monthly basis. Health outcomes at the State and jurisdiction levels are assessed annually through Vital Statistics, Medicaid, Title X, and PRAMS data.

Strategy 1 performance measures include:

- number of women receiving comprehensive women’s health services
- number of women referred to or from STD clinics
- number of women referred to or from behavioral health programs
- number of FQHC primary care providers trained through Title X
- number of new enrollees in Medicaid family planning services
- number of enrollees utilizing Medicaid family planning services

- number of visits to Title X family planning clinics
- percentage of pregnancies that are unintended

Strategy 2 performance measures include:

- number of applications processed within 10 days
- total number of applications
- weeks pregnant at time of application
- number of women receiving QuickStart prenatal services
- number of Perinatal Navigator patient encounters
- number of home visits conducted with pregnant women

Strategy 3 performance measures include:

- number of women receiving comprehensive women's health services
- number of Postpartum Referral forms received at Health Department
- number of Level I and Level II site visits conducted
- number of Safe Sleep DVDs distributed
- percent of VLBW infants born at Level III birthing hospitals
- number of postpartum home visits conducted

Challenges and Outlook

Although the Plan builds on strengths in Maryland's perinatal care system, including the innovative work being done in the local health departments, hospitals and other community-based groups, there are challenges to reducing Maryland's infant mortality rate at this time. Racial disparities in health outcomes continue to affect communities in need. The economic downturn has put enormous pressures on families, as well as on public resources for addressing health needs. Safety net providers, like local health departments and community health centers, have been stretched thin over the years. Obstetric and other medical providers continue to struggle with high malpractice premiums, leading to fewer providers able to help with early prenatal care. Uninsured patients, many from working families, continue to face mounting financial pressure from their medical bills. Despite these challenges, Maryland's Plan for transitioning existing resources to develop Comprehensive Women's Health Centers, expediting early entry into prenatal care, and assuring culturally-sensitive follow up services to women and infants at risk and in need, represents a systems change approach for reducing Maryland's unacceptably high infant mortality rate.

Partners

DHMH will work to expand and strengthen partnerships in order to more effectively identify and address the root causes of infant mortality and infant mortality disparities in Maryland, and will make every effort to work closely with consumers. Current partners include:

- Consumers – collaborate in efforts to develop educational and informational materials targeting the general public
- Office of Minority Health and Health Disparities – supports Perinatal Navigator programs in at-risk communities, community collaboratives focused on infant mortality, and perinatal services targeting high risk women

- Maryland Medicaid – facilitates coordination with Medicaid Managed Care Organizations and analysis and reporting of birth outcomes data
- Alcohol and Drug Abuse Administration – helps facilitate referrals to and from Comprehensive Women’s Health clinics and shares data
- Family Health Administration – helps coordinate data sharing and program efforts across Administration divisions such as WIC, Children with Special Health Care Needs, and Chronic Disease Prevention
- Mental Hygiene Administration – provides screening and referrals to and from Comprehensive Women’s Health clinics
- Department of Human Resources – collaborates in efforts to enroll pregnant women in Medical Assistance through the Accelerated Certification of Eligibility (ACE) process; data sharing
- Governor’s Office for Children - provides oversight and direction in the development and implementation of home visiting programs
- Maryland Community Health Resources Commission – data sharing and financial support to community-based programs addressing infant mortality
- Maryland Institute for Emergency Medical Services Systems (MIEMSS) – oversees compliance of level III birthing hospitals with the Maryland Perinatal System Standards
- Maryland Patient Safety Center – collaborates on efforts to develop and implement a standardized postpartum discharge process across Maryland birthing hospitals
- Maryland State Department of Education – collaborates on implementation of home visiting programs and data sharing efforts
- Maryland birthing hospitals – collaborates on a wide variety of issues to improve birth outcomes such as delivery of VLBW babies at level III centers, prohibition of elective deliveries prior to 39 weeks gestation, breastfeeding promotion, tobacco cessation, etc.
- Federally Qualified Health Centers – coordinating efforts to improve care coordination, case management, referrals to community resources, and provider training
- Maryland Chapter of AAP – provides expertise and resources on a range of topics related to infant and child health
- Maryland Chapter of ACOG – provides expertise and resources on a range of topics related to maternal health and birth outcomes
- Maryland Breastfeeding Coalition – supports efforts to remove barriers to breastfeeding and improve breastfeeding rates in Maryland
- CareFirst Blue Cross/Blue Shield – supports the development and implementation of home visiting programs
- Managed Care Organizations – collaborate to facilitate early entry of pregnant women into prenatal care
- Community Oriented Pediatricians – collaborate on efforts to improve coordination and communication between obstetricians and pediatricians, and to address maternal risks
- Certified Nurse Midwives – provide perinatal care to high risk populations through programs such as Prince George’s County’s “Tapestry Program” and provide expertise and resources around issues such as home births
- University of Maryland – provides expertise and support on a range of topics related to maternal and child health
- John’s Hopkins Hospital, Medical Center, and School of Public Health – provide expertise and support on a range of topics related to maternal and child health

Appendix A

Summary of Findings from the Public Input Process

Findings

A number of valuable strategies and recommendations for reducing infant mortality in Maryland were obtained through public input. The following is a summary of findings from the Governor's Forum, the Pediatricians' Meeting, and the web-based survey.

Overarching Strategies

- Make targeted outreach a defined strategy of the Plan using messaging aimed at important populations that is culturally competent, at the appropriate health literacy level, and uses appropriate venues and media.
- Use mass media to deliver consistent messaging on reproductive life planning, Safe Sleep, pregnancy risks, breastfeeding, the importance of prenatal care, the availability of services, etc.
- Promote comprehensive, coordinated care between health care providers, hospitals, schools, local health departments, and support services.
- Expand home visiting and patient navigator programs (including those that utilize peer educators).
- Facilitate real time access to data (including birth records, death records, Pregnancy Risk Assessment forms, hospital and practice-specific outcomes, SUID/SIDS deaths, Fetal Infant Mortality Review, Child Fatality Review, Managed Care Organizations, etc.) to address disparities and inform interventions.
- Promote cultural competency among health care providers.
- Promote health literacy.
- Expand partnerships to include Certified Nurse Midwives, MD State Department of Education, Department of Human Resources, consumers, community organizations and businesses, academic centers, private providers/clinics, health care payors, Federally Qualified Health Centers, and advocates.
- Promote evidence-based approaches and quality improvement initiatives, and evaluate outcomes.
- Research the causes of health disparities in birth outcomes and the role of fathers, racism, stress, the environment and diet in birth outcomes.

Before Pregnancy

- Support and incentivize through reimbursement comprehensive primary care in a medical home that includes reproductive life planning, women's health, and coordination with support services such as nutrition, exercise, weight management, smoking cessation, behavioral health services, dental care, etc.
- Improve access to family planning services (for example through school-based centers, expanding income eligibility, and targeting at-risk groups).
- Promote comprehensive sex education in the schools.

During Pregnancy

- Expedite enrollment into medical assistance for pregnant women.

- Expand access to obstetrician providers by making it easier for obstetricians to take medical assistance (particularly on the Eastern Shore).
- Incentivize early prenatal care through reimbursement.
- Promote Certified Nurse Midwife model and practice.
- Standardize obstetrician and hospital practices around testing (prenatal, HIV, and drug screening).
- Promote breastfeeding and breastfeeding support services.
- Promote smoking cessation resources.
- Provide support for transportation, for pregnant women at a minimum.

Following Delivery

- Develop a standard postpartum hospital discharge plan for mothers and infants.
- Develop a standardized postpartum discharge referral form for high risk mothers and infants.
- Expand postpartum home visiting services and promote streamlined access to and coordination among programs.
- Incentivize communication between obstetricians and pediatricians.
- Work with pediatricians to address maternal risks (chronic illness, lifestyle issues, family planning, smoking cessation).

Appendix B
Maryland Forward, Governor's Forum on Children and Health
January 10, 2011
Notes from the Infant Mortality Breakout Session

Identifying and Implementing Best Practices

Summary

- Embed community health workers familiar with community resources/available services at the point of health care delivery (including home visiting).
- Encourage flexibility of funding so local health departments have more flexibility in delivering services (e.g. working with WIC participants at the point of WIC service).
- Use the local health implementation plan as a vehicle to push out best practices and prioritize programs/initiatives.
- Disseminate best practices and fund broader implementation/expansion. Include payors in the plan.
- Hold MCOs and other payors accountable in regard to promoting best practices/proven methods.
- Use messaging that is local, targeted to populations, at the appropriate health literacy level, and culturally competent.
- Use mass media to disseminate consistent messaging.
- Use consistent messaging on Safe Sleep, breastfeeding, the importance of early prenatal care, and the availability of health services.
- Work with a life course perspective.

Primary and Preventive Care

Summary

Top three things to reduce infant mortality:

- 1) Promote access to family planning by: school-based health centers, targeting at-risk groups, and expanding income eligibility.
- 2) Provide easier access to coverage through standardized, one-stop shop (leverage IT).
- 3) Support comprehensive primary care (may include OB). Reimburse for cultural competency and linguistic services. Collaborate with behavioral health. Standardize discharge planning.

Notes

- Partnerships include: DHR, MSDE, local health departments, academic centers, medical centers, private clinics, payors, foundations, FQHCs, beneficiary advocates, community based organizations, professional groups
- Proper education: younger females - diet, preconception health, communication with physicians, school system as partner
- Access to reproductive health services: decisions for intended pregnancies, increase physicians' ability to navigate the system

- Advocate for Medical Assistance providers: increase access to OB, need to make it easy to take MA, remove financial barriers
- Delay in entry to care: expedited eligibility (happening now), in need of information linkage between local health departments and physicians' offices to facilitate care
- Preventing unwanted pregnancy: emergency contraception
- Home visiting funding: state plan being organized by GOC, nurse-family partnership (E.U. based model)
- 2014 Exchange
- Focus on males and at-risk youth: include Dept. of Juvenile Services and foster care, think broader and target efforts
- Promote school-based health centers: provide information, access to care, integrate education into classroom
- Have one place to go for information: use the same model throughout the state (e.g. Baltimore Health Care Access), may be integrated with 2014 Exchange
- Women with chronic diseases as risk factors: comprehensive care necessary, primary care providers identified, address underlying issues (e.g. depression)
- Inconsistent use of best practices: create standards of care
- Increase eligibility for family planning services to 250% of the federal poverty level
- Provide culturally competent and linguistically appropriate care: reimburse for these services, give providers tools to assist with non-English speaking patients, interpreters as a primary care cost
- Drug exposed infants: increase collaboration between providers and substance abuse clinics
- Position public health for partnership with Affordable Care Organizations: clinical care combined with community care, private sector and public health safety net,
- Address workforce issues and system of care issues: focus on solutions to primary (OB) services
- Post neonatal care to age one: standard plan for hospital discharge, home visiting

Eliminating Disparities

Summary

- Improve data organization and translation to reduce disparities.
- Engage and inform communities and providers regarding culture, language, and literacy.
- Quality improvement is not evenly distributed across institutions and communities.
- Require institutions to do cultural needs assessments of the community and institution.

Notes

- Diversity is our strength.
- Data: examine data (e.g. multiple births and infant mortality rate); determine what is driving disparities; analyze data by cultural group; improve data gathering and move to action; develop comprehensive, integrated data system to enhance coordination; data is necessary to inform us on how to eliminate disparities
- Community based regionalized panels: support development of community collaboratives to address the disconnect with the community

-
- Life course perspective
 - Medical-social models
 - Involve communities (local businesses, beauty salons, etc.)
 - Support comprehensive women's health and address cultural competency
 - Connect community and tertiary systems
 - Focus on the African American community (most at risk): community collaboratives, comprehensive women's health navigators, prenatal care, health-social model, new birth certificate with increased number of racial categories
 - Allocate funding to investigate the causes of infant mortality in African Americans (e.g. prematurity): need to research/look at literature on the causes
 - Faith-based health initiatives (e.g. South Carolina faith-based model for hypertension)
 - Promote patient-centered care, patient education, staff/provider education, and cultural/linguistic appropriateness.
 - Cultural competency legislation submitted
 - Encourage hospitals, OBs, etc. to take courses in cultural competency.
 - Use bold, community-based approaches and assume eligibility for everyone in those communities.
 - Use community-based, comprehensive approach in targeted communities – Baltimore City, Prince George's County, Dorchester, Somerset. Examine rates and numbers/magnitude.
 - Social determinants of health and the life course perspective
 - Health insurance is important but not sufficient for accessing care.
 - Undo racism, educate women and families, attack myths and misperceptions
 - Address stigmatization of postpartum depression, behavioral health, and substance abuse.
 - Tie communities to regional perinatal systems.

Appendix C The Role of Community Pediatricians in Preventing Infant Mortality

February 11, 2011

Maryland Department of Health and Mental Hygiene

Attendees:

DHMH: Josh Sharfstein, Secretary; Fran Phillips, Deputy Secretary for Public Health Services; Russ Moy, Director Family Health Administration

Pediatricians: Dianna Abney, private practice, Waldorf; Tina Cheng, JHMI/JHSPH
Sue Dulkerian, Mercy; Renee Fox, UM; Bernie Guyer, JHSPH; Virginia Keane, UM; Jill Kempthorne, UM; Scott Krugman, Frankin Square; Wendy Lane, UM; Eric Levy, Kennedy Krieger; Rich Lichenstein, UM ; Kristin Miller, Sinai; Mary Mussman, Maryland Medicaid Program; Gena O’Keefe, Family League/Annie E. Casey Foundation; Ozzie Taube, Sinai; Joe Wiley, Sinai

Center for Maternal and Child Health Staff: Bonnie Birkel, Maura Dwyer, Lee Woods

Unable to attend:

Pat Chaulk, Maryland Patient Safety Center; Steve Czinn, UM; George Dover, JHU

1. Welcome and Introductions

Deputy Secretary Fran Phillips welcomed everyone and provided opening comments about the problem of infant mortality in Maryland and the Department’s desire for input from the pediatric community.

2. Infant Mortality in Maryland

Dr. Moy presented a brief overview of Maryland infant mortality data. He also presented hospital-based quality improvement projects that have led to significant improvements, including:

- Distribution of hospital-specific very low birth weight neonatal mortality data, leading to improved mortality rates and less variability in mortality rates over time
- Maryland Patient Safety Center’s Perinatal Collaborative initiative to eliminate elective inductions at <39 weeks gestation, resulting in more than a 60% reduction in these deliveries

Dr. Moy posed the question “Can a hospital-based continuous quality improvement (CQI) structure and process also improve community-oriented outcomes?” He then provided coded hospital-specific data stratified by race on infant mortality rates, % low birth weight births, % of births to women receiving late or no prenatal care, and % of births to women receiving first trimester prenatal care. Can hospitals impact risk factors for poor birth outcomes and racial disparities in the communities they serve?

3. Open Discussion

Importance of pediatrician's contact with mothers and opportunities to impact birth outcomes –

- Maternal risks (chronic illness, lifestyle issues, planning and spacing of pregnancies)
- Promotion of services (prenatal care, smoking cessation, family planning, etc.)
- Prescription of nicotine patch for parents who smoke
- Limitation – time constraint; consider utilizing health educator (esp. in high-risk practices)

Standardization of care –

- OB practices (standardize tests during prenatal care e.g. HIV, drug testing)
- Pediatric practices (safe sleep messaging, teen health / transition to adulthood issues e.g. family planning, folate, potential impact of health issue on future pregnancy)
- Hospital practices – high risk patients may select hospital by practices (e.g. drug screening of mothers in L&D); assure discharge summary is “primary care user friendly”
- Joint Neonatal & Perinatal Learning Networks - addressing standardized discharge planning for mothers & infants
- Checklists – highlight age-appropriate risk factors, simplify EPSDT forms (“what’s important when”), checklist with risks for poor outcome for newborns
- Home visiting programs - better infrastructure and coordination among programs, inform providers and families about programs, streamline access

Racial disparities –

- Further evaluation of data on causes
- Further evaluate hospital-specific data presented - hospital practices, culture of hospital (how welcoming to minority groups, availability of minority practitioners)

Medical Home –

- Conflicting reimbursement incentives between primary care, subspecialists, emergency departments
- Coverage of preventive services
- Payment changes to incentivize primary care

Request for data –

- Strong interest expressed in getting hospital / practice-specific outcomes data
- SUID / SIDS deaths
- ER visits by asthmatics
- Data sources – MCOs / insurance, groups doing surveillance (FIMR, CFR)

Future discussions / communication –

- Both obstetricians and pediatricians must be involved to address infant mortality and disparities
- Currently poor communication between obstetricians and pediatricians (difficulty getting prenatal test results, pediatricians never get copy of Prenatal Risk Assessment)
- Incentivize communication between obstetricians and pediatricians
- Expand future discussion to include obstetricians, advanced practice nurses, social workers, etc.

4. Next steps

- DHMH will post the Governor's Delivery Unit Plan for reducing infant mortality in Maryland on the DHMH website for public comment and we encourage all participants to review the Plan. As soon as it is live, we will send out the URL.
- DHMH will evaluate SUID/SIDS deaths by hospital of birth and make this data available to the hospitals.
- A future meeting will be planned to include pediatric and obstetric practitioners.

Appendix D Survey Questions and Results

Quantitative Findings

1. What is the nature of your interest in this survey (please select one response)?

	Response Total	Response Percent	Points	Avg
As a Patient/Consumer	26	8%	n/a	n/a
As a Public Policymaker	20	6%	n/a	n/a
As an Advocate	27	8%	n/a	n/a
As a Maryland resident	63	19%	n/a	n/a
As a Health Care Worker	178	53%	n/a	n/a
Other, please specify view	28	8%	n/a	n/a
Total Respondents		339	100%	
(skipped this question)			49	

2. If you selected Health Care Worker, please select the subcategory that applies to you.

	Response Total	Response Percent	Points	Avg
MD	18	11%	n/a	n/a
CNM	9	5%	n/a	n/a
CRNP	5	3%	n/a	n/a
PA	1	1%	n/a	n/a
RN	86	50%	n/a	n/a
LPN	0	0%	n/a	n/a
Nursing Assistant	1	1%	n/a	n/a
Social Worker	5	3%	n/a	n/a
Case Manager	6	4%	n/a	n/a
Behavioral health practitioner	2	1%	n/a	n/a
Health Educator	15	9%	n/a	n/a
Other, please specify view	23	13%	n/a	n/a
Total Respondents		171	100%	
(skipped this question)			217	

3. Please enter your email address

View responses to this question	
Total Respondents	264
(skipped this question)	124

4. In Which Maryland jurisdiction do you live?

	Response Total	Response Percent	Points	Avg
Allegany County	5	2%	n/a	n/a
Anne Arundel County	22	8%	n/a	n/a
Baltimore City	26	9%	n/a	n/a
Baltimore County	25	9%	n/a	n/a
Calvert County	0	0%	n/a	n/a
Caroline County	2	1%	n/a	n/a
Carroll County	12	4%	n/a	n/a
Cecil County	10	4%	n/a	n/a
Charles County	10	4%	n/a	n/a
Dorchester County	7	3%	n/a	n/a
Frederick County	11	4%	n/a	n/a
Garrett County	4	1%	n/a	n/a
Harford County	13	5%	n/a	n/a
Howard County	21	8%	n/a	n/a
Kent County	3	1%	n/a	n/a
Montgomery County	32	11%	n/a	n/a
Prince George's County	8	3%	n/a	n/a
Queen Anne's County	6	2%	n/a	n/a
St. Mary's County	3	1%	n/a	n/a
Somerset County	7	3%	n/a	n/a
Talbot County	3	1%	n/a	n/a
Washington County	15	5%	n/a	n/a
Wicomico County	26	9%	n/a	n/a
Worcester County	6	2%	n/a	n/a
Unknown	2	1%	n/a	n/a
Total Respondents		279	100%	
(skipped this question)			109	

5. In general, how much do you agree that the 2009 Plan for Reducing Infant Mortality focused on the correct strategies?

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No opinion	Response Total	Points	Avg
Select only one answer	16.97% (46)	56.46% (153)	14.02% (38)	7.38% (20)	1.85% (5)	3.32% (9)	271	n/a	n/a
Total Respondents							271		
(skipped this question)							117		

6. In general, how much do you agree with the following statement:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No opinion	Response Total	Points	Avg
The 2009 Plan for Reducing Infant Mortality will reduce infant mortality rates among African Americans in MD.	3.07% (8)	47.13% (123)	31.8% (83)	12.26% (32)	2.68% (7)	3.07% (8)	261	n/a	n/a
Total Respondents							261		
(skipped this question)							127		

9. May we contact you to clarify your comments?

	Response Total	Response Percent	Points	Avg
Yes	160	76%	n/a	n/a
No	51	24%	n/a	n/a
Total Respondents		211		
(skipped this question)		177		

Qualitative Findings

7. What challenges to implementing the Plan would you expect?

View responses to this question	
Total Respondents	189
(skipped this question)	199

The most frequently cited challenges to carrying out the work in the Plan are:

- (1) budget cuts and insufficient funding to support staff and programs;
- (2) patient compliance with medical treatment and social and public health interventions; and
- (3) a lack of awareness around the issues of pregnancy, risks, resources, etc., particularly among certain hard to reach populations such as teens, substance users, the poor, undocumented women, and the homeless.

A number of challenges posed by limitations of the health care system were cited as well including:

- Lack of providers, particularly obstetricians and other specialty physicians, on the Eastern Shore
- Insufficient support services (mental health treatment, long term substance abuse treatment, smoking cessation, nutrition, breastfeeding support, safe at home, etc.)
- Lack of comprehensive, coordinated care (links between providers, hospitals, schools, local health departments, and support services)
- Lack of focus on reproductive life planning in primary care
- Use of unnecessary and costly medical interventions during pregnancy, such as induction and elective C-sections
- Lack of engagement with health care providers (regarding the importance of patient education, following patients, using evidence based strategies, coordinating with other providers, etc.)
- Complex MCHP (Maryland Children’s Health Program) eligibility process and delayed entry into care while awaiting MCO (Managed Care Organization) card
- Low provider reimbursement and reimbursement structures that do not support counseling and mentoring, that reimburse C-sections at a higher level than vaginal births, and that do not incentivize 1st trimester prenatal care visits and family planning
- Lack of cultural competency among providers

- Confusing, unfriendly, unwelcoming system
- Obstetricians unwilling to see patients before 12 weeks of pregnancy
- Low levels of health literacy

Other challenges include:

- Transportation not only to doctor’s appointments but also to pick up prescriptions, WIC (Women, Infants and Children), behavioral health appointments, smoking cessation, childbirth classes, etc.
- Social determinants of health
- Insufficient funding to support home visiting and patient follow-up, particularly in the postpartum period
- Chronic disease and poor health status prior to pregnancy
- Fear and mistrust of the medical system, particularly among African Americans and teens
- Lack of comprehensive sex education in the schools
- Framing the subject as one to be addressed through a short-term plan rather than as an entrenched community issue to be addressed over the long term
- Lack of political will

8. Please provide any additional comments or suggestions you may have regarding the Plan.

View responses to this question	
Total Respondents	140
(skipped this question)	248

- Support targeted home visiting programs, including Healthy Start
- Promote the Midwifery model and practice
- Provide school based sex/reproductive health education, starting in middle school
- Promote breastfeeding and breastfeeding support services such as La Leche League
- Focus on educating the mother’s support system (partner, family, friends, other pregnant women, surrogate grandmothers and sisters)
- Conduct a marketing campaign regarding healthy pregnancies, safe sleep, resources available utilizing social media
- Implement targeted outreach and community mobilization
- Promote education and linkages: standardized family planning and reproductive health education messages through schools, providers including pediatricians, case management, WIC, school based health centers, behavioral health, patient navigators, etc. with regular communication and coordination between these entities
- Research the causes of health disparities, the role of fathers in birth outcomes, and the role of stress, racism, the environment and diet in birth outcomes
- Provide transportation, at least for all pregnant women on medical assistance
- Implement financial penalties for unnecessary medical interventions such as induction and elective C-section

- Make mental health and substance abuse treatment available, especially for young women and teens
- Expand access to family planning through WIC, comprehensive women's health, school based health centers, substance abuse treatment centers and mental health treatment centers
- Promote the use of system navigators
- Promote the Quitline and other smoking cessation resources
- Generate prenatal referrals from ERs to MCOs and local health departments for services and enrollment in medical assistance
- Include dental care in comprehensive women's health
- Support county level infant mortality task forces
- Expand eligibility for prenatal care to undocumented women
- Facilitate real time access to data (birth records, death records, Pregnancy Risk Assessments, etc.)
- Involve MCOs (and their case managers and outreach workers) and midwives in efforts to reach and follow pregnant women and in implementing the Plan
- Host regular webinars on the issue of infant mortality

References

Advocates for Children and Youth. February 2009. Issue Brief: Low-Birthweight Births Cost Maryland Millions; 6(18).

Behrman RE, Butler AS. 2007. Preterm birth: causes, consequences, and prevention, Washington, DC: National Academies Press.

Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, Giugliani E, Haider BA, Kirkwood B, Morris SS, Sachdev HP, Shekar M; Maternal and Child Undernutrition Study Group. 2008. What works? Interventions for maternal and child undernutrition and survival. *Lancet*; 2;371 (9610):417-40.

Bustan MN, Coker AL. *Am J Public Health*. Maternal attitude toward pregnancy and the risk of neonatal death. 1994 Mar;84(3):411-4.

CDC (Centers for Disease Control and Prevention). Infant Deaths – United States, 2000 – 2007. *MMWR* 2011;60(01):49-51.

CDC (Centers for Disease Control and Prevention). Recommendations to improve preconception health and health care – United States. A report of the CDC/ATSDR Preconception Care Work Group and Select Panel on Preconception Care. *MMWR* 2006;55(RR-6):1-23.

Chuang S, Inder K. 2009. An effectiveness analysis of health care systems using a systems theoretic approach. *BMC Health Services Research*; 9:195.

DHHS (US Department of Health and Human Services). *Healthy People 2010*. 2nd ed. Washington, DC: US Department of Health and Human Services; 2000.

DHHS (US Department of Health and Human Services). *Healthy People 2020*. Washington, DC: US Department of Health and Human Services; 2010.

Donovan EF, Ammerman RT, Besl J, Atherton H, Khoury JC, Altaye M, Putnam FW, Van Ginkel JB. Intensive home visiting is associated with decreased risk of infant death. *Pediatrics*. 2007 Jun;119(6):1145-51.

Goldenberg RL and Culhane JF. Low birth weight in the United States. *Am J Clin Nutr*. 2007;85(suppl):584S-90S.

Maryland Infant Mortality Epidemiology Work Group: Findings from Data Analysis and Overall Recommendations. August 2011. Available online at http://dhmh.maryland.gov/babiesbornhealthy/pdf/updates/IM_Epi_Work_Group_%20Report_Final_Aug_24_2011.pdf

Maryland DHMH (Department of Health and Mental Hygiene). Affordable Care Act Maternal, Infant and Early Childhood Home Visiting Program: Maryland's Statewide Needs Assessment. September 2010. Available online at http://fha.maryland.gov/mch/hv_needs_assess.cfm.

Maryland HSCRS (Health Services Cost Review Commission). 2009.

Maryland PRAMS (Pregnancy Risk Assessment Monitoring System). 2009. Available online at www.marylandprams.org

Maryland Vital Statistics, Department of Health and Mental Hygiene. "Infant Mortality in Maryland, 2010." July 2011. Available online at http://dhmh.maryland.gov/babiesbornhealthy/pdf/updates/Infant_Mortality_MD_2010_final.pdf

Maryland Vital Statistics, Department of Health and Mental Hygiene. "Infant Mortality in Maryland, 2009." July 2010. Available online at <http://vsa.maryland.gov/doc/imrrep09.pdf>.

Misra DP, Grason H. Achieving safe motherhood: applying a life course and multiple determinants perinatal health framework in public health. *Women's Health Issues*. 2006;16:159-175.

Moreno L, Devaney B, Chu D. Effect of Healthy Start on infant mortality and birth outcomes. *Evaluation*, July 2000.

NVSR (National Vital Statistics Reports), Volume 58, Number 17, April 30, 2010

The Annie E. Casey Foundation, 2011 KIDS COUNT Data Book: State Profiles of Child Well-being. Available online at: <http://www.aecf.org/~media/Pubs/Initiatives/KIDS%20COUNT/123/2011KIDSCOUNTDataBook/KCDataBook2011.pdf>

Thompson JN. 2007. Fetal nutrition and adult hypertension, diabetes, obesity, and coronary artery disease. *Neonatal Netw*; Jul-Aug; 26(4):235-40.

Wilensky S, Proser M. C. Community approaches to women's health: delivering preconception care in a community health center model. *Women's Health Issues*. 2008;18S:S52-S60.

Willenger M, Hoffman HJ, Wu KT et al. 1998. Factors associated with the transition to non-prone sleep positions in the United States: The National Infant Sleep Position Study. *JAMA*; 280(4):329-335.

Williamson DM, Abe K, Bean C, Ferre C, Henderson Z, Lackritz E. Report from the CDC: current research in preterm birth. *Jl of Women's Health*. 2008;17(10):1545-49.

Wise P. Transforming preconceptional, prenatal and interconceptional care into a comprehensive commitment to women's health. *Women's Health Issues*. 2008; 1-6.