

State of Michigan



2016-2019
Infant Mortality
Reduction Plan

February 2016



STATE OF MICHIGAN
DEPARTMENT OF HEALTH AND HUMAN SERVICES
LANSING

RICK SNYDER
GOVERNOR

NICK LYON
DIRECTOR

Update from Director
February 2016

Dear Colleagues:

I am pleased to introduce the State of Michigan's Infant Mortality Reduction Plan for 2016-2019. For every 1,000 Michigan live births, approximately seven infants die before reaching their first birthday. In 2013, five out of every 1,000 Caucasian babies and 10 out of every 1,000 Hispanic babies died before their first birthdays. Among our African American population, that rate is 13 out of every 1,000 babies born died before reaching the age of one. In response to Michigan's health status record, Governor Rick Snyder has identified the reduction of infant mortality as a top priority in his plans to make Michigan a healthier state for all of us to live.

The strategies in this plan will build on new and existing partnerships, current program efforts, and data and research driven interventions. All strategies will address the social determinants of health and health equity as we build an enhanced network of support systems to ensure that all Michigan infants survive to celebrate their first birthday and continue to thrive.

Building on collective efforts of many stakeholders and the first Infant Mortality Reduction Plan from 2012-2015, this Plan was developed collaboratively by the Michigan Department of Health and Human Services, health care providers, hospitals, local health departments, universities, professional organizations and associations, business and community leaders and more. We are grateful to these stakeholders and the Infant Mortality Advisory Council for their expertise, passion, knowledge and commitment to achieving success in tackling this issue with very complex causes.

Healthy mothers, babies and families are the foundation of a healthier Michigan. It will take the whole state working together to achieve this goal. We look forward to your involvement as we work collaboratively to accomplish our vision of creating an environment for all Michiganders to be healthy.

Sincerely,

A handwritten signature in blue ink that reads "Nick Lyon".

Nick Lyon
Director

Acknowledgments

Special recognition goes to these individuals and organizations, as well as staff from the Michigan Department of Health and Human Services for sharing their knowledge, time and experience to develop an Infant Mortality Reduction Plan that will impact the lives of our youngest residents and their families. We are grateful for everyone's passion and commitment to address infant mortality in Michigan.

American Congress of Obstetricians and Gynecologists Michigan	Michigan March of Dimes
Beaumont Hospital	Michigan Osteopathic Association
BHK Child Development Board	Michigan Primary Care Association
Children's Hospital of Michigan	Michigan Public Health Institute—Center for Child and Family Health
Detroit Department of Health & Wellness Promotion	Michigan State Medical Society
Detroit Medical Center	Michigan State University-Department of Epidemiology and Biostatistics
Greater Detroit Area Health Council	Michigan State University-Department of OB/GYN
Health Delivery, Inc.	Michigan State University-Institute for Health Policy
Henry Ford Health System	Mott Children's Health Center
Hurley Medical Center	Northwest Michigan Community Health Agency
Ingham County Health Department	Nurse-Family Partnership-NFP National Service Office
Institute for Population Health	Perinatal Research Branch, NICHD/NIH/DHHS
Inter-Tribal Council of Michigan	School Community Health Alliance of Michigan
Michigan American Academy of Pediatrics	Sparrow Hospital-NICU/PICU
Michigan Association of Health Plans	St. John Providence Health System
Michigan Association of Health Plans Medical Directors	Tomorrow's Child (Michigan SIDS)
Michigan Association of Local Public Health	University of Michigan-Department of OB/GYN
Michigan Council for Maternal and Child Health	W. K. Kellogg Foundation
Michigan Health and Hospital Association	Wayne County Health Department
Michigan House of Representatives-Health Policy	
Michigan League for Public Policy	

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Executive Summary

All babies should be born healthy, thrive in supportive communities, and have the opportunity to live healthy and productive lives. In 2012, the State of Michigan released the 2012-2015 Infant Mortality Reduction Plan in response to persistently high infant mortality rates and significant disparities in birth outcomes.

Moving forward, Michigan pledges its continued commitment to improving birth outcomes with the release of this 2016-2019 Infant Mortality Reduction Plan. This document, also referred to as the Plan, provides background information about the planning process, building on the 2012-2015 Infant Mortality Reduction Plan, and incorporating successes and lessons learned from its implementation over the past three years.

The Plan describes progress to date, and it provides a roadmap for ongoing improvement in birth outcomes. The accomplishments and activities of the 2012-2015 Plan are described in detail in this document, as are descriptions of existing statewide projects that support healthy mothers and babies. The Plan goals and strategies are supported by new organizational structures to assure effective implementation. New project elements assure better communications and collaborative learning.

The nine goals of the 2016-2019 Infant Mortality Reduction Plan are as follows:

1. Achieve health equity and eliminate racial and ethnic disparities by addressing social determinants of health in all infant mortality goals and strategies.
2. Implement a perinatal care system.
3. Reduce premature births and low birth weight.
4. Support increasing the number of infants who are born healthy and continue to thrive.
5. Reduce sleep related infant deaths and disparities.
6. Expand home visiting and other support programs to promote healthy women and children.
7. Support better health status of women and girls.
8. Reduce unintended pregnancies.
9. Promote behavioral health services and other programs to support vulnerable women and infants.

The Plan utilizes the Life Course Model framework, which lays the foundation for implementing strategies to address social determinants of health and reduce health disparities in birth outcomes. After extensive evaluation and strategic planning with broad stakeholder engagement, the updated Plan has been tailored to meet the needs of diverse communities across the state. It has been carefully crafted in a manner that is data driven, with evidence-based practices to address the complexities of poor birth outcomes. New advances in data collection, analysis, and reporting will be leveraged to guide effective strategies that are based on evolving evidence of their effectiveness.

Introduction

Babies grow and develop within the context of their families and communities. Most are born healthy and thrive within communities that support their health and wellbeing. However, too many babies in Michigan are not born healthy and many do not thrive. Michigan ranks 8th in the United States for having the highest rate of infant deaths.¹

The State of Michigan is committed to using effective strategies, wide-ranging partnerships, and focused and aligned resources to assure that all mothers and babies are healthy and thrive within communities that offer an equitable chance for health and wellbeing. Building on the previous accomplishment of the 2012-2015 Plan, and guided by the understanding that a baby's health begins before birth, Michigan will use the 2016-2019 Infant Mortality Reduction Plan to build system capacity to improve birth outcomes and reduce infant mortality. To improve birth outcomes, partners are working together in greater numbers and across greater geographical reach than ever before. With the 2016-2019 Plan as their guide, public and private sector partners have committed to work together to gain greater understanding of effective, data-driven strategies that can spread improvements in the health and wellbeing of all Michigan families and achieve the three-part aim of better health, better care, and lower costs for birth outcomes.

Reducing infant mortality is a key priority in the 2016-2019 Plan. In addition, the Plan extends its scope to efforts beyond infant mortality, to assure that mothers and fathers are healthy and supported by strong social networks; that babies not only survive, but also thrive throughout their lives; and that communities have the necessary resources and infrastructure to create the conditions for health and wellbeing. Building on the successes of the 2012-2015 Plan, coupled with improved data collection and analysis capabilities, partners can identify and target opportunities for improvement to assure that every baby is born healthy, thriving, and with the promise of future tomorrows.

Background

Michigan's 2016-2019 Infant Mortality Reduction Plan has been developed by the Michigan Department of Health and Human Services in partnership with a broad and diverse range of stakeholders from across the state. In October 2011, in response to persistently high infant mortality rates and high disparities, the Michigan Department of Health and Human Services (then the Michigan Department of Community Health) convened nearly 300 stakeholders from across the state for an Infant Mortality Summit with representation from broad stakeholder groups, such as public health, government, health care providers, community and faith-based organizations, and citizens. The charge of the stakeholders was to identify priority strategies to reduce infant mortality.

As a result of the Summit, eight key strategies for reducing infant mortality were identified, Michigan's 2012-2015 Infant Mortality Reduction Plan was developed, and it was released in August 2012. The Plan goals were as follows:

1. Implement a regional perinatal care system.
2. Promote the adoption of policies to eliminate medically unnecessary deliveries before 39 weeks gestation.
3. Promote adoption of progesterone protocol for high-risk women.
4. Promote safer sleep practices to prevent suffocation.
5. Expand home visiting programs to support vulnerable women and infants.
6. Support better health status of women and girls.
7. Reduce unintended pregnancies.
8. Weave the social determinants of health into all strategies.

As part of ongoing surveillance and monitoring of infant mortality in Michigan and in preparation for the expiration of the 2012-2015 Plan, the Infant Mortality Steering Committee participated in a strategic planning process to determine if the goals and strategies of the 2012-2015 Plan were adequate to achieve desired performance in birth outcomes going forward. As a result of this critical planning process, the Infant Mortality Steering Committee determined that revising the goals and strategies was necessary to continue to accelerate improvements in birth outcomes. The Plan was revised for the following reasons:

- To assure that the infant mortality goals and key strategies were updated to reflect the progress made to date, include current issues and activities, and integrate current best practice and evidence-based strategies
- To develop and implement data-driven work and outcomes processes
- To define, monitor, and evaluate statewide implementation of the key strategies
- To improve stakeholder involvement in the Plan

- To assure effective statewide spread of strategies
- To assure that the committee and workgroup structures more effectively support the goals and strategies

The Infant Mortality Steering Committee oversaw the implementation of the 2012-2015 Plan with many notable achievements that are detailed below in the section entitled, *2012-2015 Infant Mortality Reduction Plan Accomplishments and Activities*. Building on its successes, the Infant Mortality Steering Committee charted a course that resulted in important improvements to the Plan, including restructuring of the organization and processes.

Life Course Model and Social Determinants of Health Framework

Infant mortality is a complex problem that can be more effectively understood and addressed using the Life Course Model. This includes a framework for how social determinants of health impact health outcomes for individuals, as well as whole groups of people. *“Life course looks at health as an integrated continuum and suggests that a complex interplay of biological, behavioral, psychological, social, and environmental factors contribute to health outcomes across the course of a person’s life. It builds on recent social science and public health literature that posits that each life stage influences the next and that social, economic, and physical environments interacting across the life course have a profound impact on individual and community health.”*²

Social determinants of health—often defined as the circumstances in which people are born, grow up, live, work, and age—shape individual behavior and the choices that are available to individuals for improving health.³ Some individuals, and specific groups of people, do not have the same access to health care and have limited choices for improving health. Access to health care and healthy behaviors are important, but social determinants of health can have a greater impact on health and birth outcomes. These factors can adversely impact health when nutritious food, transportation, safe housing, education, livable and/or sustainable wages are not available or are very difficult to obtain.

Persistent health inequities among people of color and/or those living in poverty are directly related to their living conditions and personal experiences, and these factors must be addressed in any plan designed to improve birth outcomes of all people. To eliminate these inequities, experts in infant mortality across Michigan are working to understand the contributing health determinants from historical, social, and cultural perspectives for each population group where the rate of poor outcomes is higher than it is for more advantaged populations. Partnerships and strategies to address social determinants of health will take an interdisciplinary approach including partners in public health, housing, employment, and the court system to improve the support systems for those most adversely impacted by socioeconomic and racial disparities. Lack of critical resources and adequate support systems over a life span and over many generations creates stress for individuals, and groups of people. This historic and longstanding chronic stress can lead to chronic health conditions among individuals and demonstrable inequities across entire populations.³

The Life Course Model provides a framework to analyze the origins of poor birth outcomes and the inequities in infant mortality through a population based focus that is rooted in social determinants and social equity. There are four concepts used in this analysis:

1. **Timeline:** Today’s experiences and exposures influence tomorrow’s health. The framework emphasizes early identification of health risk and intervention to improve optimal health. The Life Course Model highlights the important link between the health of mothers and the corresponding health of their infants. As such, the goals and strategies of the 2016-2019 Infant Mortality Reduction Plan focus on healthy mothers as a strategic approach to improving birth outcomes.
2. **Timing:** Health trajectories are particularly affected during critical or sensitive periods such as pregnancy. The timing of services and supports before pregnancy is important

for preventing two causes of infant mortality: preterm birth and low birth weight. The early availability of those determinants that positively impact the health behavior of the mother is an important focus for improving the health of her baby.

3. **Environment:** Physical, chemical, and biological factors can affect behavior and health. Service providers must assure linkages to community resources that address factors such as safe housing, food access, clean air and water, job opportunities, and family violence to improve the impact of the environment on the health of mothers and babies.
4. **Equity:** Lack of access to the necessary conditions for health and wellness is rooted in historical policies and practices that create barriers to opportunity for health and wellbeing. These *structural barriers* become entrenched in social, economic, and political systems. Achieving equity is to eliminate these barriers and to do specific and measurable activities that ensure that *all* individuals and groups of people have optimal conditions for being born, growing, living, working, playing and aging.⁴

There are also four key concepts related to what is identified as the social determinants of health that are essential to understand if Michigan's infant mortality rates are to be improved:

1. **Social and environmental:** Health is nurtured in families and is supported and created in the community, such as family and social networks, in schools, workplaces, playgrounds, parks, and places of worship. Health status is a result of the air each person breathes, the water each drinks, in the ability to buy affordable nutritious foods, and to live in communities with low crime and violence. Where there is a lack of support, policy, and investment in healthy conditions, health suffers.
2. **Economic:** Families must have the financial resources to support a healthy lifestyle, a safe home, and a supportive community. Economic stability is a critical factor in health and wellbeing. Where there is economic deprivation and economic instability, individuals and groups of individuals have significant barriers to being healthy.
3. **Education:** The level of education attained by parents has a significant impact on their health and the health of their children. Parents with at least a high school diploma bring opportunities and economic stability that leads to better health and better birth outcomes.
4. **Access to quality health care:** It is essential that families have access to medical, dental, and specialty services as early as possible when needed for preventive, acute, and chronic care. Optimal care within medical homes that are using evidence-based protocols must be available for everyone. Care and supports must be coordinated across health and community resource environments.³

Taking into consideration the role that racial disparities and the social determinants play in Michigan's plan for reducing infant mortality, the Plan focuses strategies geared toward the highest risk families and communities. This will ensure that everyone who lives in Michigan has health care and that socioeconomic determinants of health are addressed to achieve and sustain health and wellness. To improve the number of Michigan infants who survive and thrive requires purposeful, measurable movement toward improved health equity, which is a key focus of the 2016-2019 Infant Mortality Reduction Plan.

Current Infant Mortality Status in Michigan

During the early 20th century, public health efforts and advances in medical care for women and infants resulted in a dramatic reduction in the infant mortality rate. However, the rate of change has slowed; and while the overall trend is downward, Michigan's infant mortality rate has not declined significantly in recent years. Furthermore, racial disparities remain unacceptably high. Differences in rates are also seen when data are examined at the region, county, and city levels. Improving birth outcomes is one of the most critical health issues to address across the state. Therefore, racial and regional disparities need to be understood and resources need to be invested into strategies that eliminate disparities and improve birth outcomes.

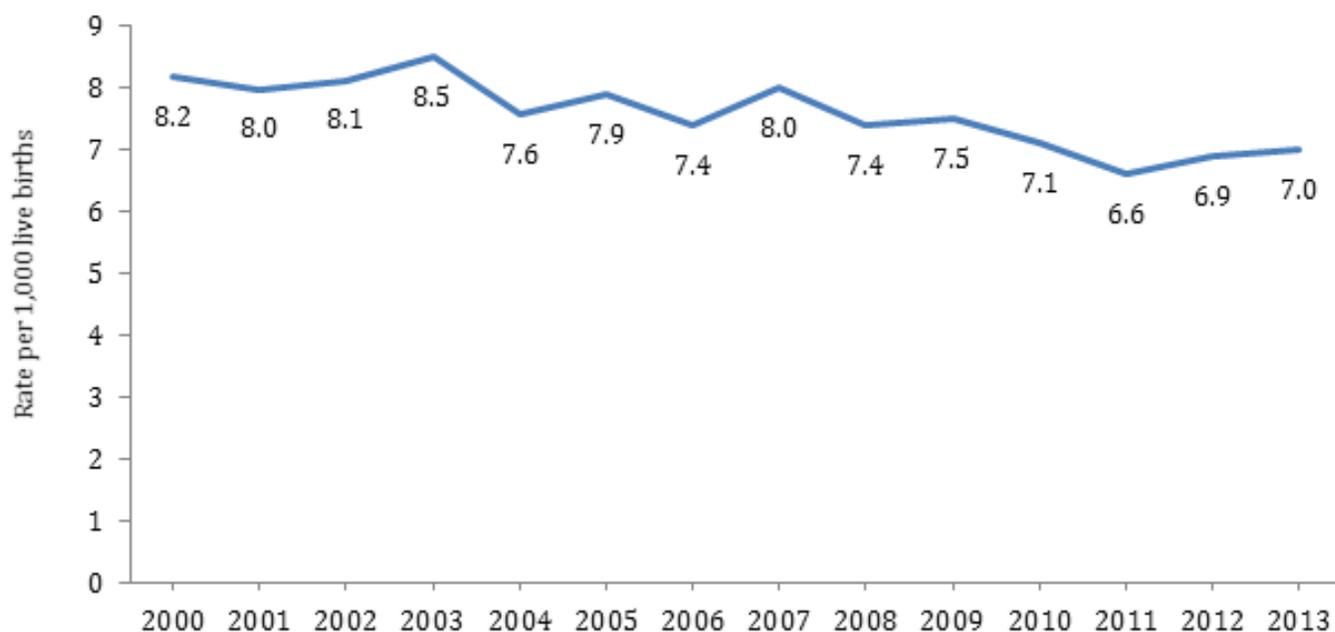
Measuring the rate of infants dying in a community is a globally accepted critical indicator of health. The infant mortality rate—the number of infant deaths per 1,000 live births—tells much more than how many babies die in the first year of life. It is a commonly used proxy for maternal and child health because to have healthy babies, there must first be healthy mothers. The infant mortality rate is also used as a marker for difficult-to-measure family and community-level factors such as whether the mother has social support, access to healthy food, and safe housing. As described above, these socioeconomic determinants have a significant impact on the health and wellness of a mother and baby.⁵

Data analysis is essential to determine where Michigan's baseline is, as well as to assess progress and drive improvements through measurement. The following data provide an overview of Michigan's infant mortality trends and statistics to better understand progress and identify areas of opportunity for healthy babies and mothers.

Michigan Infant Mortality Rate: Trends and Statistics

The infant mortality rate in Michigan has decreased 14.6 percent from 2000 to 2013 as seen in Figure 1. Nonetheless, Michigan's overall infant mortality rate remains higher than the national rate (2013: 6.0/1,000) and higher than Healthy People 2020 target of 6.0 infant deaths per 1,000 live births.⁶ Since 2011, there has been a slight increase in the infant mortality rate, however mortality rates fluctuate from year to year and there is not yet sufficient data that would show the impact of strategies implemented in 2012. It takes a minimum of two years to begin to see the outcomes of interventions on the infant mortality rate (and long-term impacts may take many years). The timeframe includes, a time period before pregnancy (improving mother's health immediately before conception), nine months of a full term pregnancy, and finally, the first full year after birth to measure the survival of the infant. The previous Infant Mortality Reduction Plan began in 2012. Therefore, the earliest year the infant mortality rate would reflect the strategic interventions of the 2012-2015 Plan would be 2014. Data for 2014 have yet to be finalized.

Figure 1: Infant Mortality Rate, Michigan, 2000-2013



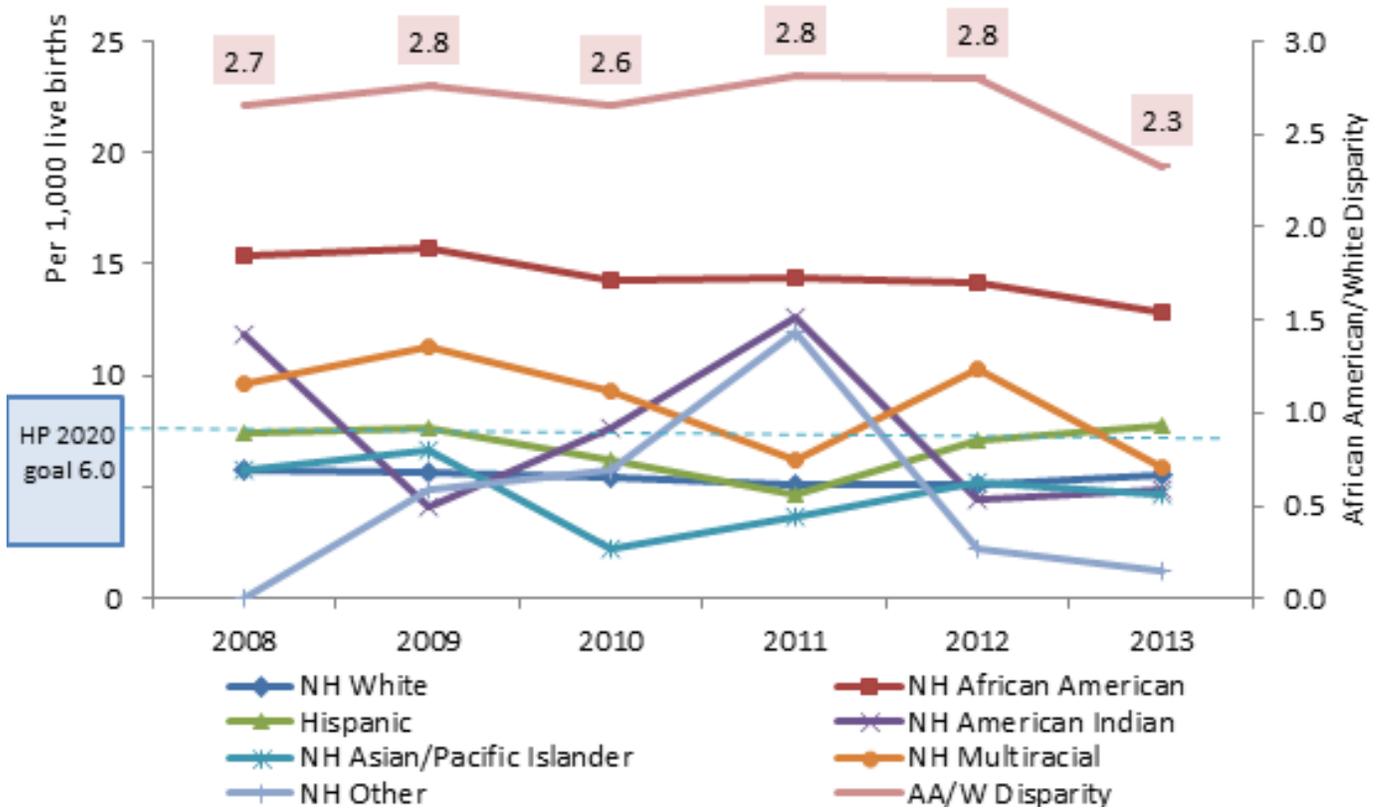
Source: Michigan Department of Health and Human Services (MDHHS), 2013. Michigan Resident Birth and Death files, MDHHS Division for Vital Records & Health Statistics

Infant Mortality and Racial/Ethnic Disparities

The burden of infant mortality is not shared equally among Michigan infants. There are racial differences, or more accurately referred to as disparities, in infant mortality rates that must be recognized and included in the planning effort to accomplish the goal of reducing the overall rate. In 2005, infant mortality for African American babies was three times that of White babies. In 2013, this ratio of White infant deaths to African American infant deaths fell to the rate of 2.3. This indicates that, while continued efforts are needed to reduce the root causes of inequity, there have been some improvements. Historically, infant mortality rates among Hispanic infants have been close to that of Non-Hispanic White infants, but in 2012 there was an uncharacteristic increase. Additional data are needed to identify and address the recent rise in infant mortality among the Hispanic population.

The infant mortality rate for American Indian infants has historically been nearly as high as that of African American infants. However, with the small population size, rates vary dramatically from year to year. Thus, the rate depicted in Figure 2, below, should be interpreted cautiously. These racial disparities remain across the different populations, even when accounting for maternal education, adequate prenatal care, smoking, insurance status, and other characteristics. Further analysis of the causes and risk factors of infant mortality continues and informs the strategies within the Plan. Consideration of community and individual stress due to segregation, exacerbated by unequal opportunity and unequal access to health and other public services for people of color, requires continued examination and action.

Figure 2: Trend of Infant Mortality by Race/Ethnicity and African American/White Ratio, Michigan 2008-2013

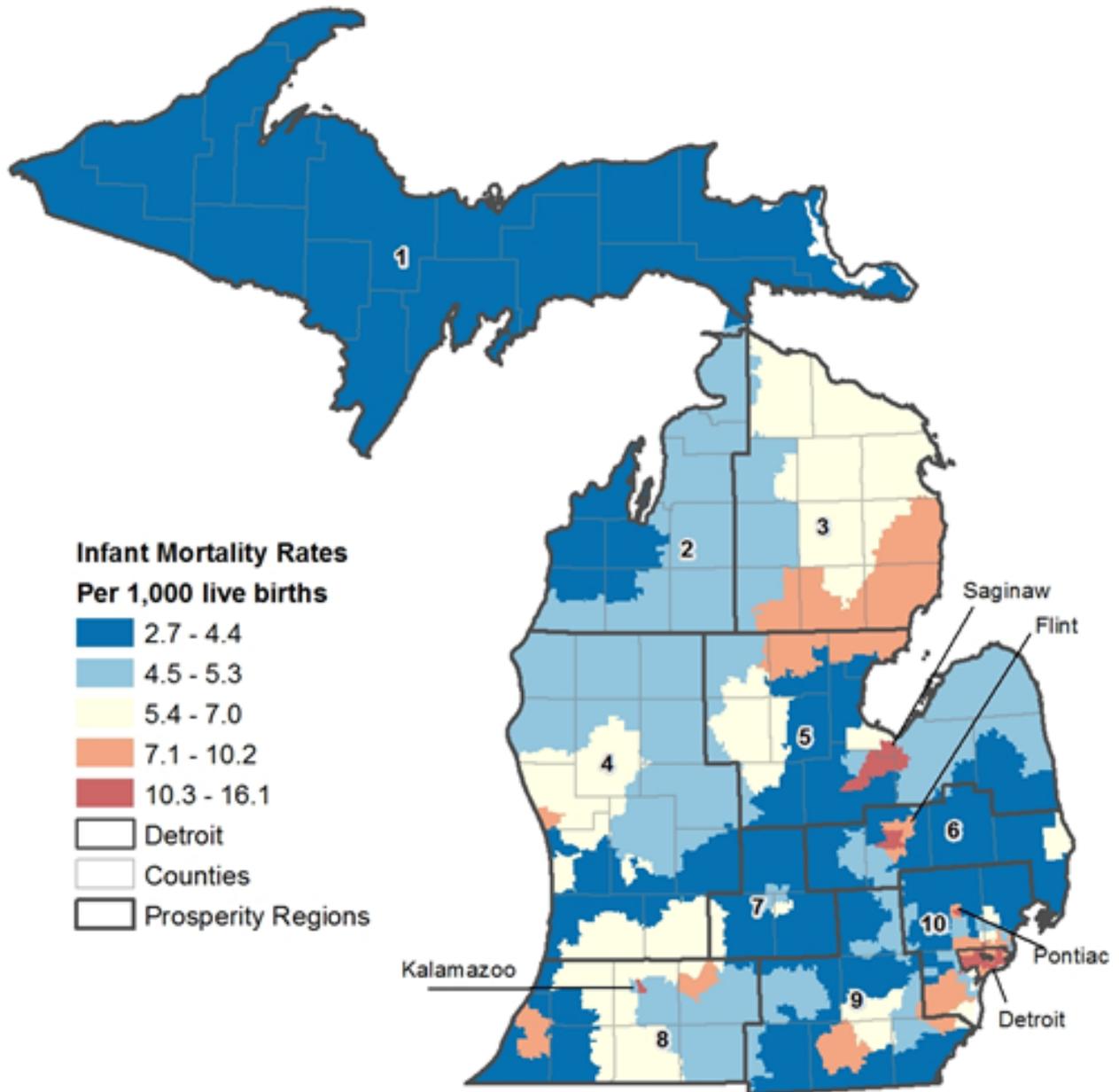


Source: Michigan Department of Health and Human Services (MDHHS), 2013. Michigan Resident Birth and Death files, MDHHS Division for Vital Records & Health Statistics

Geographical Distribution of Infant Mortality

Figure 3 shows that infant mortality rates vary among geographical regions in Michigan. Rates are highest in urban centers and in rural northeastern Michigan. Infant mortality rates in the Detroit Metropolitan Area are shown in Figure 4. This highlights the importance of analyzing data at the regional, county, city and neighborhood levels to plan, intervene, and track to make progress in these areas with highest infant mortality. Maps provide important information about where there is greatest need for efforts to reduce infant mortality. Local variation at the level of communities, neighborhoods, and zip codes can be obscured and not show local differences if data is collected and analyzed at the regional level.

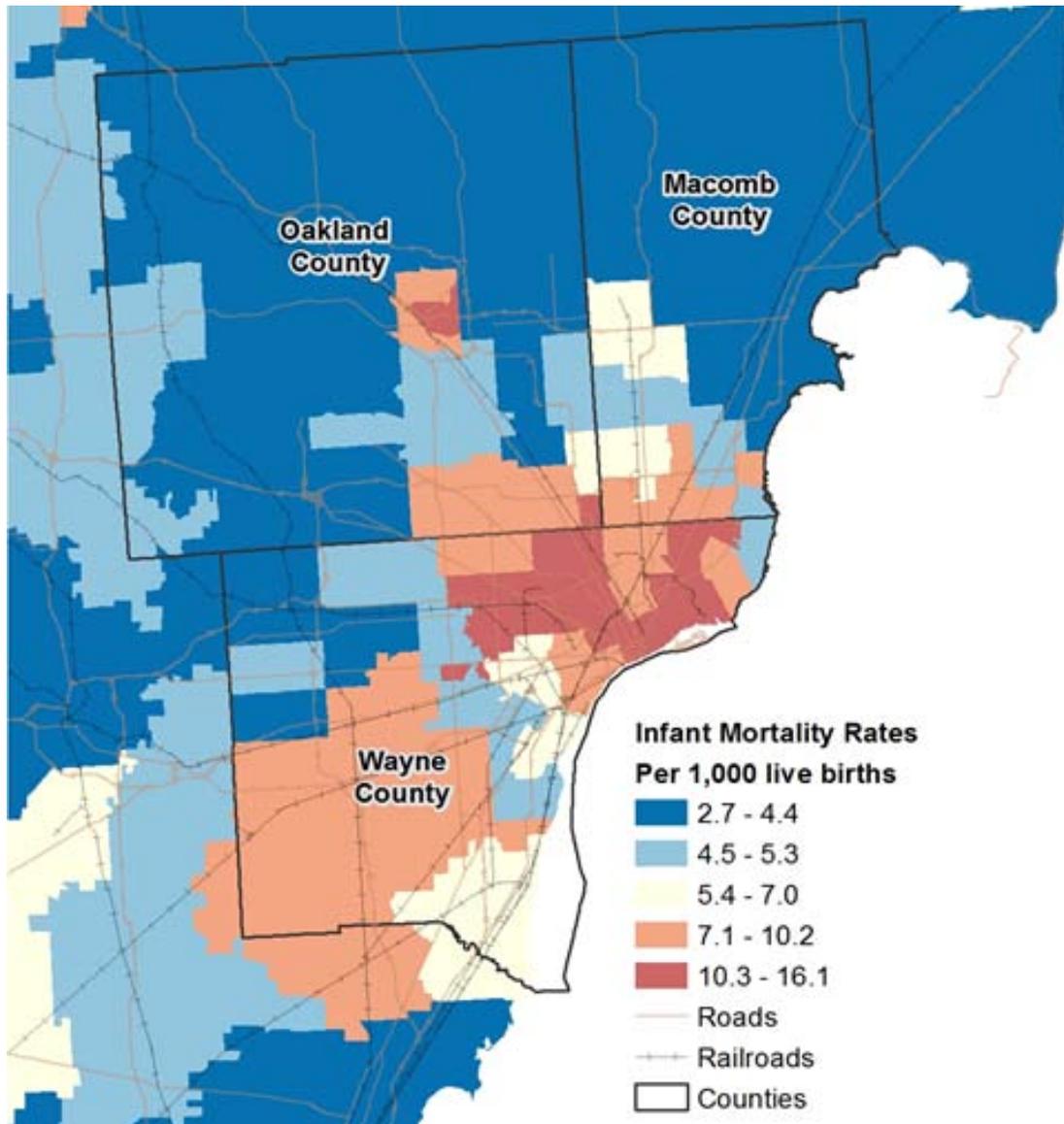
Figure 3: Infant Mortality Rate per 1,000 Live Births, Michigan 2009-2013



	No. Zones	No. Deaths	No. Births	% Black	% Medicaid
	27	719	199163	5.5	34.2
	23	636	130452	10.3	43.2
	22	627	104458	11.4	52.0
	25	739	88478	38.6	54.6
	17	639	49570	79.6	54.9
Total	114	3360	572121	19.2	44.5

Source: Vital Statistics Birth & Linked Infant Death Cohort (2009-2013)
 Map created by Sue C. Grady, PhD, MPH Geography, Michigan State University

**Figure 4: Prosperity Region 10
Infant Mortality Rate per 1,000 Live Births, Michigan 2009-2013**

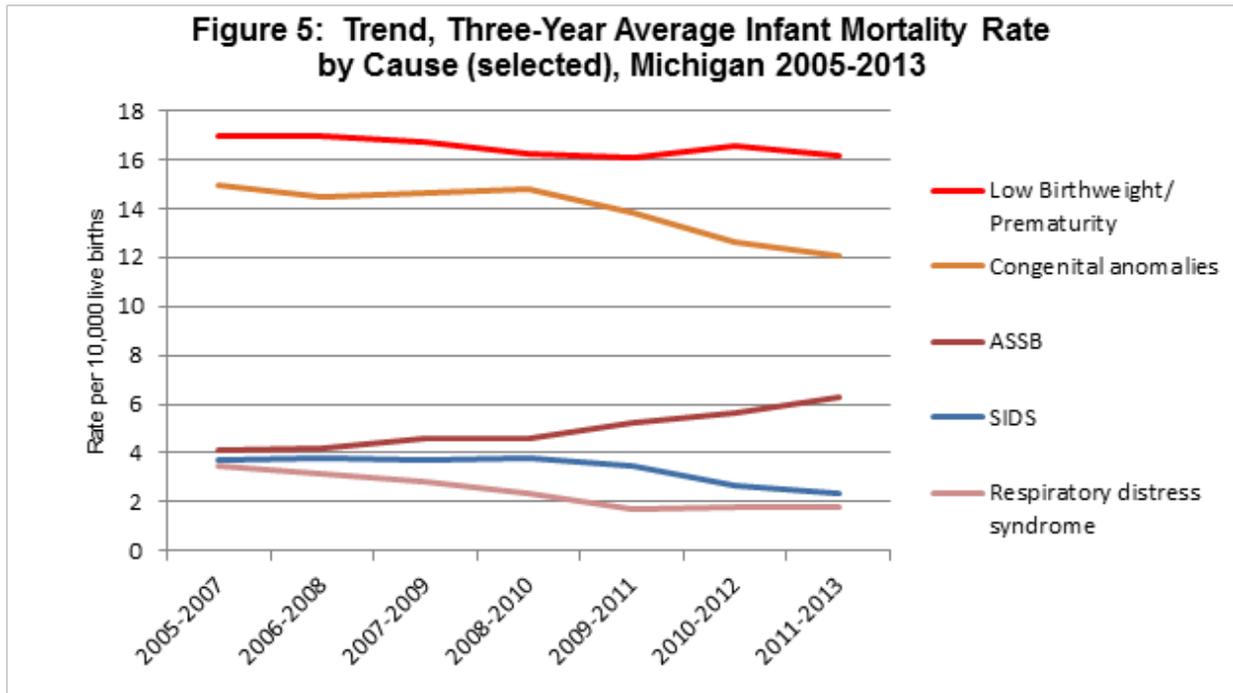


Source: Vital Statistics Birth & Linked Infant Death Cohort (2009-2013)
Map created by Sue C. Grady, PhD, MPH Geography, Michigan State University

Causes of Death

Figure 5 shows the Three-Year Average Infant Mortality Rate by Cause (2005-2013). The cause of death is based on the International Classification of Disease 10 (ICD-10) codes from the death certificate. Deaths due to prematurity (birth prior to 37 weeks gestation) and/or low birth weight (less than five and a half pounds) are the leading causes of infant mortality in Michigan. It is encouraging to note that these are showing a slow decline in recent years.

The challenges to families with premature and low birth weight babies are significant. There are also direct and indirect costs to society. The Institute of Medicine (IOM) estimated that in 2005 the average direct cost of medical care for a preterm infant in the United States was more than \$30,000, with the majority incurred in the first year of life.⁷ The average cost per infant increased to \$51,600 when the costs of maternal medical care, early intervention, special education services, and lost household productivity were considered. The annual societal economic burden associated with preterm birth in Michigan was in excess of \$631 million in 2005. Of course, this estimate is monetary cost and doesn't take into account the emotional toll on families whose baby has complications or dies due to preterm birth.



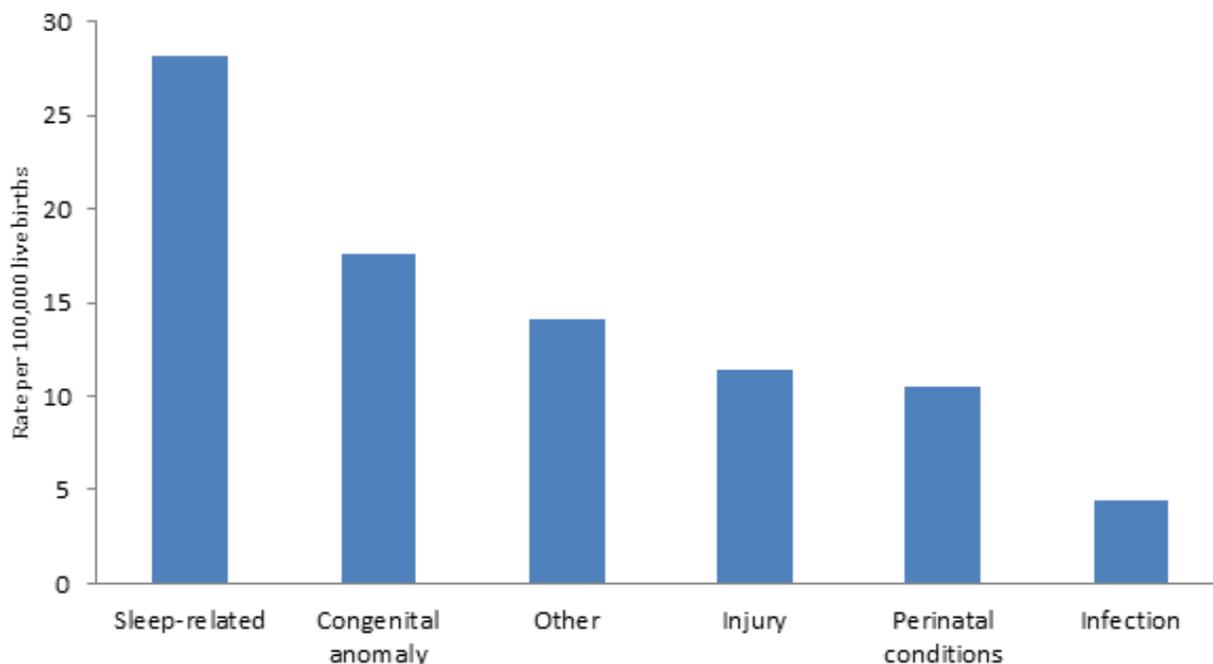
Source: Michigan Resident Birth and Death files, MDHHS Division for Vital Records & Health Statistics. Prepared by MDHHS MCH Epidemiology Section. Cause of death is based on International Classification of Diseases (ICD)-10 Classification from the death certificate. Sudden Unexplained Infant Death (SUIDS) includes Accidental Strangulation/Suffocation in Bed (ASSB-W75), Sudden Infant Death Syndrome (SIDS-R95) and Unknown (R99).

The second leading cause of death is congenital anomalies (commonly known as birth defects). There are several risk factors common to both birth defects and preterm birth that are being targeted to reduce risk in the Plan. These include adequate nutrition before and during pregnancy (especially folic acid supplementation); ensuring women with diabetes have good glycemic (blood sugar) control before and during pregnancy; maintaining or achieving a healthy weight prior to pregnancy; ensuring optimal spacing between pregnancies; and avoiding alcohol, tobacco, and certain drugs and medications.

Deaths due to an unsafe sleep environment have been increasing. These deaths are referred to as Sudden Unexplained Infant Deaths, and include: Sudden Infant Death (SIDS), Accidental Suffocation or Strangulation in Bed (ASSB), and Unknown. The infant mortality rate for Sudden Unexplained Infant Deaths was 9.9 deaths per 10,000 live births in Michigan, the third leading cause of infant mortality. As depicted in Figure 6, sleep-related death is the leading cause of death among babies 28 days to one year of age. It is of particular concern that these infant deaths, with preventable causes, are increasing and are a major cause of post neonatal infant death. Strategies that address unsafe sleep environments are addressed in the 2016-2019 Plan.

Accidental Suffocation or Strangulation in Bed (ASSB), and Unknown. The infant mortality rate for Sudden Unexplained Infant Deaths was 9.9 deaths per 10,000 live births in Michigan, the third leading cause of infant mortality. As depicted in Figure 6, sleep-related death is the leading cause of death among babies 28 days to one year of age. It is of particular concern that these infant deaths, with preventable causes, are increasing and are a major cause of post neonatal infant death. Strategies that address unsafe sleep environments are addressed in the 2016-2019 Plan.

Figure 6: The Leading Causes of Mortality Among Infants 28-days to 1-year-old, Michigan, 2013

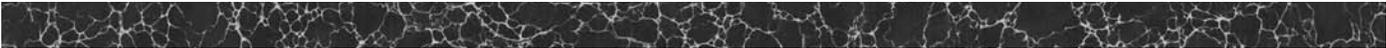


Source: Michigan Resident Live Birth Files, MDHHS Division for Vital Records and Health Statistics. Cause of death is based on the ICD-10 from the death certificate.

Data Capacity

Infant mortality data has informed stakeholders in the development of the 2016-2019 Plan, which provides the roadmap for reducing infant mortality for the next three years. Although much of the information that is collected through vital records has not changed, improvements have been made in how data are collected and processed, which has resulted in improved timeliness of vital records datasets that are used to track infant mortality.

The Pregnancy Risk Assessment Monitoring Systems, a joint project with the Michigan Department of Health and Human Services and the Centers for Disease Control and Prevention, is an important source of information about infant and mother's health before, during, and after pregnancy.^{8&9} The Pregnancy Risk Assessment Monitoring System surveys mothers of infants 3-9 months of age and information from the survey informs several of the infant mortality strategies. For the next phase of the survey, the Michigan Pregnancy Risk Assessment Monitoring System developed a number of new questions aimed at better understanding the social determinants of health, including stress levels and unmet social support needs as it relates to infant health. This will expand and improve the information to guide the monitoring of the 2016-2019 Plan.



Data collection is essential, but so too is the ability to analyze and interpret the findings. The ability to analyze the data in more depth has improved since 2012. In addition to the work done by analysts and statisticians in the Division for Vital Records and Health Statistics, the maternal and child health epidemiologists began analyzing live birth, infant death, still birth, and other datasets to provide information to inform stakeholders and to reinforce the concept that to prevent infant mortality, infants must be born healthy, live in safe, nurturing environments, and that mothers must be healthy before and during pregnancy. The Michigan Department of Health and Human Services has utilized a new and informative perspective of analyzing information, geo-spatial analyses of infant mortality rates and causes using maps, along with epidemiological analysis. This has been extremely useful to inform the 2016-2019 Infant Mortality Reduction Plan by identifying geographical areas with populations of greater need, where resources should be focused.

In addition to these advances in data collection and analysis, Perinatal Periods of Risk provide a higher focused and greater detailed understanding of how to measure infant mortality to make progress in reducing infant deaths and prematurity.¹⁰ The Perinatal Periods of Risk framework defines and measures the key health risks during the perinatal period, and guides a stepwise approach to analyzing the root causes of fetal and infant death to reduce infant mortality. This framework was developed by the World Health Organization^{7 & 10} and adapted for use across the United States by City MatCH, the Centers for Disease Control and Prevention, and the March of Dimes.^{11 & 13} This framework provides critical information to guide community efforts to reduce the number of fetal and infant deaths. Although it is not the only analysis of infant mortality, the framework is being used in Michigan to guide evidence-based strategies to improve outcomes for each of the strategies related to the goals defined in the 2016-2019 Plan. A more in-depth explanation of the Perinatal Periods of Risk can be found in the Appendices.

In summary, the 2016-2019 Infant Mortality Reduction Plan places greater emphasis on data as an ongoing component of the work and emphasizes the importance of continuously improving the infrastructure and processes to achieve better birth outcomes. The Current Infant Mortality Status in Michigan section of this document shows significant progress and presents clear opportunities for continued improvement guided by the 2016-2019 Plan.

Michigan's 2016-2019 Infant Mortality Reduction Plan

The 2016-2019 Infant Mortality Reduction Plan will engage a broad and diverse group of stakeholders committed to a collective effort to reduce infant mortality and promote healthy mothers, babies, and families. The new plan builds on the 2012-2015 Plan with the following nine goals:

1. Achieve health equity and eliminate racial and ethnic disparities by addressing social determinants of health in all infant mortality goals and strategies
2. Implement a perinatal care system
3. Reduce premature births and low birth weight
4. Support increasing the number of infants who are born healthy and continue to thrive
5. Reduce sleep related infant deaths and disparities
6. Expand home visiting and other support programs to promote healthy women and children
7. Support better health status of women and girls
8. Reduce unintended pregnancies
9. Promote behavioral health services and other programs to support vulnerable women and infants

Each of the nine goals is further developed with specific strategies to achieve better birth outcomes, with a focus on building system capacity in every community through development of organizational, policy, data, workforce, and quality improvement infrastructure. A high priority of the Plan is to eliminate racial, ethnic, economic, and geographic disparities in infant mortality by more equitably addressing the social determinants of health across all targeted goals and strategies. The development and implementation of data-driven outcomes will take precedence and support the creation of work plans that guide and inform agency, organizational, institutional, and community-based work in achieving all of the goals and strategies. The following infant mortality reduction goals and strategies utilize a scientific means of achieving a reduction in infant mortality through the use of evidence-based approaches and best practices.

Goal 1: Achieve health equity and eliminate racial and ethnic disparities by addressing social determinants of health in all infant mortality goals and strategies to assure that all babies are born healthy and have the opportunity to thrive in communities that provide an equitable opportunity for health and wellbeing.

- a. **Apply a life course approach across systems** that considers health and wellbeing across the continuum of life. "Each stage influences the next and social, environmental, and physical environments interacting across the life course have a profound impact on the individual and community." The mother's overall health impacts birth outcomes, and babies that are born healthy are on the path to being healthy children and adults.

- b. Transform systems infrastructure to promote equity practices** by assessing system capacity to advance equity, and by providing the organizational, policy, data, workforce, and quality improvement infrastructure necessary to address social determinants of health and advance health equity.
- c. Allocate resources to support equity approaches** focusing resources on those populations that have historically experienced poor health in order to improve birth outcomes.
- d. Standardize data collection and analysis** and report data findings in a manner that reflects inequities and guides action for advancing equity.
- e. Utilize an equity lens in program standards and protocols** by taking into consideration the impact of programs and policy on addressing social determinants of health and advancing health equity.
- f. Provide health equity training for all staff to improve knowledge and the skills needed to apply equity in all work** for a well-trained workforce that assures that resources are used to maximize each individual's health and quality of life opportunities.
- g. Promote health equity among non-traditional partners, engaging all sectors that impact where we live, learn, work and play**, including workforce development and community partners with the understanding and capacity to work toward equity in all of its actions.

- Goal 2: Implement a perinatal care system** to achieve a level of safer and more effective care before, during, and after delivery. Michigan perinatal care systems are designed to assure that babies are born with the right care at the right place.
- a. Develop and support regional community-based perinatal care systems** to improve infant mortality by assuring the appropriate level of care that is needed at birth. This can reduce infant mortality and the cost of infants that require complex care.
 - b. Support the transition from developmental assessment clinics to programs** to ensure that babies continue to be healthy. Infant development is tracked and families are connected to services in their communities when needed.
 - c. Prevent, identify, and treat neonatal abstinence syndrome and fetal alcohol spectrum disorders** to decrease the numbers of babies exposed to harmful medications and alcohol and to help those that have been exposed.
 - d. Promote breastfeeding initiation and reduce disparities** by encouraging all mothers to breastfeed their babies for its significant benefits to the health of the baby and mother.
 - e. Promote quality care improvement and standard safety protocols** through continuous quality improvement processes using the principles of improvement and reliability science to develop systems of care that assure optimal care before, during, and after the birth.

Goal 3: Reduce premature births and low birth weight to improve the opportunity for babies to survive and thrive.

- a. **Promote adoption of policies to eliminate medically unnecessary deliveries before 39 weeks gestation** to minimize complications of the mother and baby due to medically unnecessary deliveries.
- b. **Promote adoption of progesterone protocol for high-risk women** to prevent preterm birth, a leading cause of infant mortality in Michigan.
- c. **Promote tobacco cessation including e-cigarettes, among pregnant women** to reduce the significant health risks to mother and baby from tobacco and e-cigarette use (e.g., increased risk of preterm delivery and low birth weight).

Goal 4: Support increasing the number of infants who are born healthy and continue to thrive by supporting safe and supportive family and community environments and providing access to services that assure optimal health and wellbeing.

- a. **Promote involvement of fathers and males** by recognizing, communicating, and supporting the significant role of fathers in the formative years of a child's life (including cognitive development, emotional development, social development, physical health, and school achievement). It is also important to recognize, communicate and support men's health as it has a significant impact on healthy birth outcomes and the health of children (such as the impact of smoking on fetal development).
- b. **Identify child abuse and neglect risk and link to services** to assure that children are safe and protected from unsafe circumstances.
- c. **Promote breastfeeding initiation and duration, and reduce disparities** by encouraging all mothers to breastfeed their babies for the significant benefits of breastfeeding to the health of the baby and mother.
- d. **Promote family centered medical homes and well child visits including immunizations** to assure that families with infants and children have access to comprehensive and coordinated medical services (preventive, chronic, and acute care services) that are integrated with developmental, behavioral, and human services.
- e. **Promote newborn screening with follow-up and linkage to services** to ensure that all babies are screened for serious health problems and, if needed, are linked to the services.
- f. **Promote infant and early childhood developmental screening** including social/emotional screening, to ensure early identification of neurodevelopmental and behavioral issues and linkage to appropriate services for optimal development of every infant and toddler. This helps ensure that a child is ready for school with optimal potential for learning.
- g. **Promote sickle-cell disease treatment protocols during infancy** to assure early identification and the earliest possible intervention, with continuing family and medical support as needed.
- h. **Promote infant oral health** to ensure optimal oral health among children for the positive impact of oral health on health and wellbeing.

Goal 5: Reduce sleep related infant deaths and disparities, as sleep position and sleep environment are major, modifiable risk factors contributing to this preventable cause of infant death. Michigan's goal is to eliminate infant sleep-related deaths, with a priority focus on eliminating the racial disparities that exist.

- a. **Promote safer infant sleeping practices to prevent suffocation** assuring that all infants are protected during sleep. It is critical that parents, caregivers, and professionals are provided information and are educated about safe infant sleep practices.
- b. **Develop and support culturally appropriate strategies for safe sleep practices** to eliminate the racial disparities that exist for these deaths in Michigan.
- c. **Promote and integrate safe sleep education into all programs that serve pregnant women and families with infants** with consistent messaging across all providers. Education is the first step in helping parents and caregivers practice safe sleep with the infants in their care.

Goal 6: Expand home visiting and other support programs to promote healthy women and children through supportive relationships that help vulnerable and at-risk pregnant women, mothers, infants and families address their needs and maximize their opportunities for health and wellbeing. Home visiting providers (including social workers, community health workers, nurses, etc.) coach, educate, offer encouragement, and connect parents with community resources with the goal that all children grow and develop in a safe and stimulating environment. Home visiting focuses on the health of mother and baby, and the baby's subsequent growth and development through the child's entrance into kindergarten.

- a. **Support and link to promising home visiting programs, such as Healthy Start** to provide support from programs that demonstrate evidence of effectiveness.
- b. **Support collaboration and link support programs across health care and community based services** in order to assure that health care is supported by an equitable approach to addressing social and economic determinants of health, and to assure an integrated approach that supports family choice and self-sufficiency.
- c. **Improve the effectiveness of outreach to high need populations, and improve the duration of enrollment in high quality home visiting programs** to better assure that these supports engage the highest risk families and continue for sufficient length of time to be effective.

Goal 7: Support better health status of women and girls to assure that they are healthy across their lives, especially during interconception (before/between pregnancies) and perinatal periods to improve birth outcomes.

- a. **Prevent and manage chronic conditions** to assure women are healthy before, during, and after pregnancy. Preventing and managing chronic disease, such as diabetes and hypertension, improves birth outcomes and sets the course for health across the child's lifetime, as well as improves the woman's health going forward.

- i. Reduce maternal mortality and disparity.
 - ii. Reduce maternal morbidity and disparity.
 - iii. Reduce incidence of obesity in women and girls.
 - iv. Reduce incidence of and severity of diabetes in women of childbearing age.
- b. Implement Michigan's Perinatal Oral Health Plan** to ensure optimal oral health among pregnant women and children for the positive impact on health and wellbeing. Because improving oral health during pregnancy may be too late, periodontal disease must be prevented pre-conception. Integrate oral health promotion and treatment into the medical home.
- i. Promote provider education among medical and dental professionals.
 - ii. Identify and promote policies that support perinatal oral health.
- c. Promote and build healthy living skills in students through education and empowerment** to assure youth are transitioning into adulthood with the skills needed to proactively manage their health and wellness throughout their life.
- i. Promote positive communication and health literacy skills through evidence-based comprehensive health education curricula.
 - ii. Support healthy decision-making and problem-solving skills through evidence-based comprehensive health education programming.
- d. Promote women's health** to ensure that women have access to the resources and that social/economic determinants of health are addresses to improve their health outcomes at all stages of life, including interconception, prenatal, and postpartum care.
- i. Improve the rate and content of postpartum visits.
 - ii. Promote adolescent well-checks.
 - iii. Promote immunizations for adolescents and pregnant women.
 - iv. Promote preconception and interconception counseling.
 - v. Promote access to healthy foods, WIC services and nutrition education
- e. Promote maternal health** to assure that women are healthy when they become pregnant and during pregnancy, including information on healthy behaviors, screening for sexually transmitted diseases, increasing folic acid use, and how to prevent birth defects.
- i. Support healthier pregnancies.
 - ii. Promote folic acid use among women of childbearing age before and during pregnancy to help prevent birth defects.
 - iii. Promote the prevention of birth defects.
 - iv. Promote screening and treatment of sexually transmitted infections.

Goal 8: Reduce unintended pregnancies through education, tools, and options that allow women to decide if and when they become pregnant. Reproductive planning should occur for all women of childbearing age and their partners to reduce unintended pregnancies, increase the number of desired pregnancies, and improve birth outcomes.

- a. **Promote healthy birth spacing (at least 18 months between pregnancies)** to prevent preterm birth, low birth weight, and infant death.
- b. **Improve the rate of pregnancies that are intended** to ensure that women and men determine when and if they want to become parents, and to reduce the negative effects of unintended pregnancy.
- c. **Expand evidence-based teen pregnancy prevention programs** to reduce the number of unintentional teen births.
- d. **Promote reproductive planning for all childbearing-aged adults as a component of primary care and promote access to reproductive health services** to ensure that women and men determine when and if they want to become parents, and to reduce the negative effects of unintended pregnancy.

Goal 9: Promote behavioral health services and other programs to support vulnerable women and infants, optimizing behavioral health for women and children (including mental health and substance abuse services) to positively impact health outcomes.

- a. **Promote social and emotional screening of women, infants, children and adolescents and link to follow-up mental health and substance use disorder services** for early identification and intervention to reduce long-term negative outcomes to the health of woman and babies.
- b. **Identify interpersonal violence in dating/relationship abuse among adolescents and women, and link to services** to reduce mental health and physical health problems. Early identification and linkage to client-centered services reduces risks for women and adolescents and supports better health and wellbeing.
- c. **Identify and reduce the impact and incidence of trauma and toxic stress and link to services.** Trauma and toxic stress that occurs with frequent or prolonged exposure to adverse events can negatively impact physical and mental health across the lifespan. Early identification and intervention reduces negative impacts and builds resilience.

The 2016-2019 Plan is a unified, collaborative effort that will span the entire state, while being tailored to the unique needs, strengths, and priorities of individual regions and communities. Monitoring and evaluating statewide implementation of the goals and strategies will assure a coordinated and effective statewide reporting. Most importantly, the Plan provides the basis for identifying, securing, and aligning resources based on needs and disparities across the state through the use of data analysis and evaluation to assure statewide spread of strategies for healthy mothers and babies.

As noted earlier, the Plan goals and key strategies were updated to reflect the progress made to date; to include current issues and activities; and to integrate current best practice and evidence-based strategies based on the accomplishments and activities during the 2012-2015 Plan. The following section describes the work upon which this new Plan is based.

2012-2015 Infant Mortality Reduction Plan

Accomplishments and Activities

Michigan is making improvements in infant mortality reduction and closing the gap in health outcomes through strategies aligned with the eight goals of the 2012-2015 Infant Mortality Reduction Plan. The following highlights the accomplishments and activities that contributed to these achievements through partnership and collaboration of the Michigan Department of Health and Human Services, community partners, and state and federal agencies with the support of the Michigan Infant Mortality Steering Committee. The achievements are organized under the eight goals defined in the 2012-2015 Infant Mortality Reduction Plan.

1. Implement a perinatal care system.

- a. A model was developed for quality improvement of regional perinatal care systems. The model emphasizes the perinatal period in the life course, focusing on healthy women before they are pregnant and infants who thrive into early childhood. Many stakeholders from around the state worked diligently over the course of four years to identify the key components of a perinatal care system; the outcomes that need to be achieved for all women; and the evidence-based and best practices. The model serves as a guide for each area of the state to improve their perinatal care services through a systematic, data-driven approach for improved outcomes that are consistent across the state. The model also supports local systems to address their unique needs and opportunities with focused local planning and leadership that guides the improvement process. Several local communities began implementation of specific improved practices.
- b. *Perinatal Level of Care Guidelines* of the American Academy of Pediatrics and the American College of Obstetrics and Gynecologists were endorsed by the Michigan Department of Health and Human Services to support consistent quality standards of services statewide and to ensure birthing hospitals operate within their level of care designations.¹⁶
- c. New regulations were adopted that add Special Care Nursery beds to Neonatal Intensive Care bed utilization standards through a collaborative effort of the Certificate of Need Commission and the Michigan Department of Health and Human Services. The Special Care Nursery regulations are based on national evidence-based and best practice guidelines.¹⁷
- d. Maternal fetal telemedicine clinics were established in Cadillac and Alpena to serve women in northern Lower Peninsula. The Cadillac site was established with support from March of Dimes through a partnership of Munson Healthcare Cadillac Hospital (formerly Trinity Health-Mercy Hospital Cadillac) and Spectrum Health maternal-fetal medicine. The Alpena site is operated by Alpena Regional Medical Center in partnership with Munson Healthcare. These sites provide high-risk maternity patients access to maternal-fetal medicine specialty services that would otherwise be limited in the region.
- e. The Michigan Health and Hospital Association implemented the Keystone Obstetrics Initiative, an evidence-based intervention to reduce maternal morbidity and mortality. Birth hospitals are focusing on engaging and educating patients about the best

options for childbirth, including labor management, labor induction, possible cesarean birth, and the potential for postpartum hemorrhage and preeclampsia. The Keystone Obstetrics Initiative impacts nearly 80 percent of all births in Michigan.¹⁸

- f. Wayne State University was awarded a second ten-year contract by the National Institutes of Health to continue hosting the Perinatology Research Branch. The Perinatology Research Branch conducts research in perinatal medicine and related disciplines with the goal of developing novel diagnostic, therapeutic, and preventive strategies to reduce adverse pregnancy outcomes, infant mortality, and disabilities. Work conducted by this group has resulted in the implementation of worldwide guidelines for the prevention of preterm birth—by the International Federation of Gynecology and Obstetrics. This organization is the only global organization representing national societies of obstetricians and gynecologists. It has member societies in 125 countries. American Congress of Obstetricians and Gynecologists is a member of this group. The guidelines include the use of cervical length screening and vaginal progesterone for the prevention of preterm birth.
- g. A statewide quality collaborative, with representation from all Neonatal Intensive Care Units and several non-Neonatal Intensive Care Units birth hospitals, participated in the Vermont Oxford Network Neonatal Abstinence Syndrome educational series, which includes activities to improve outcomes of families impacted by opiate use.
- h. Thirty birthing hospitals participated in planning and implementation efforts to increase referrals and linkages to the Maternal Infant Health Program, other evidence-based home visiting programs, and Children’s Special Health Care Services program.

2. Promote adoption of policies to eliminate medically unnecessary deliveries before thirty-nine weeks gestation.

- a. “Healthy Babies are Worth the Wait” campaign, which offers provider and consumer education materials on the importance of babies reaching full term, was co-branded and endorsed by the Michigan Department of Health and Human Services, the Michigan Health and Hospital Association, and the March of Dimes.
- b. The Joint Commission elective delivery performance measure was developed by Michigan Department of Health and Human Services, in partnership with Optum. The measure stratifies the population by geography, race/ethnicity and benefit type (fee-for-service or managed care) and was added to the suite of measures that are monitored quarterly for the Michigan Medicaid Managed Care Organizations. The elective delivery performance measure is reported annually to the Centers for Medicare and Medicaid Services.

3. Promote adoption of progesterone protocol for high-risk women.

- a. All Medicaid health plans provide coverage of both 17 hydroxy progesterone and intravaginal progesterone for approved indications of history of preterm birth and short cervix.
- b. Screening for short cervix using ultrasound examination between 18-24 weeks pregnant is included into the evidence-based *Routine Prenatal and Postnatal Care Guidelines* by the Michigan Quality Improvement Consortium.¹⁹

- c. Fee-for-Service Medicaid has improved access to progesterone products by removing prior authorization of Crinone.
- d. A new policy was implemented that allows a prescriber to order injectable 17 hydroxy progesterone from a pharmacy, which is then sent to the provider's office for administration, thereby removing potential barriers of cost for the prescriber.

4. Promote safer infant sleeping practices to prevent suffocation.

- a. On May 14, 2014, Governor Rick Snyder signed into law legislation requiring hospital and birthing professionals to provide information and education on safe sleep practices to families of newborns.²⁰
- b. Governor Snyder has issued annual proclamations recognizing September as Infant Safe Sleep Month in Michigan.
- c. The Michigan Infant Safe Sleep State Advisory Committee conducted a strategic planning process and identified priority activities within the Infant Safe Sleep work plan.
- d. A media campaign was launched in the fall of 2013 to promote safe sleep practices, focusing on regions of the state with the highest disparities and resulting in over 17 million impressions of Michigan residents as of September 2015.
- e. Several hospital-based press conferences were conducted featuring First Lady Sue Snyder to recognize hospital collaborations and increase public awareness of infant safe sleeping practices.
- f. Mini-grants were provided to the Inter-Tribal Council and local health departments in counties with the highest numbers of sleep-related deaths. This funding supported community-based safe sleep education, outreach, and awareness activities.
- g. Michigan Department of Health and Human Services partnered with Tomorrow's Child to provide the Infant Safe Sleep Forum, September 15, 2015. The forum engaged 190 community partners to enhance knowledge, discuss strategies, and identify barriers and resistance to infant safe sleep practices. The forum identified the value and importance of welcoming different perspectives on how to prevent infant deaths due to unsafe sleep environments and to seek common ground to build upon. The forum concluded with a diverse panel of community representatives who shared their unique cultural perspectives and encouraged attendees to identify the most effective method to improve sleep environments for infants. Updated educational materials continue to be provided free of charge through program partner, Tomorrow's Child.
- h. Professional educational opportunities were made available through two online trainings and presentations at conferences and professional meetings to improve consistency of infant safe sleep messages provided to families.

5. Implement Michigan Home Visiting Initiative and evidence-based home visiting models

- a. On August 1, 2012, Governor Snyder signed into law Public Act 291 of 2012, ensuring the state's investment in home visiting goes to proven, effective programs. The Act

requires that all of Michigan's funding for home visiting go to support evidence-based or promising programs, ensuring the state will receive solid returns on investment for taxpayers and strong results for participating families. It mandates that home visiting programs track and measure outcomes such as preterm births, reduction in child abuse, improved family self-sufficiency, and increased school readiness. The Michigan Department of Health and Human Services produces an annual *Home Visiting Initiative Report* as a result of the collaborative efforts across state agencies/departments. Both inter- and intra-agency partners (including Medicaid) support and are active participants in the collaborative efforts to achieve the requirements outlined in the Act. There are a number of issues that families in at-risk communities experience, including poverty, unemployment, crime and domestic violence, child maltreatment, substance abuse, infant mortality, and poor school outcomes. Through the evidence-based home visiting programs, families receive visits to the home where they work on a wide range of issues including family support and education, health and wellness, and more.¹⁴

- b. The Maternal, Infant, and Early Childhood Home Visiting program is a federal funding stream that provides grants to states to expand their evidence-based home visiting systems. In Michigan, Maternal, Infant, and Early Childhood Home Visiting funding supports the expansion and implementation of high-quality, evidence-based home visiting programs in eleven of the state's highest need communities. The funding also helps build the infrastructure to support the statewide home visiting system, including collaboration involving multiple stakeholders and partners; cross-model, ongoing professional development; monitoring; and continuous quality improvement efforts.²¹
- c. Additional state and other federal sources for funding supports further activities of the Home Visiting Initiative across the Michigan Departments of Community Health and Human Services, as well as the Michigan Department of Education.

6. Support better health status of women, infants, and girls.

- a. In April 2014, the Healthy Michigan Plan, Michigan's Medicaid expansion program, began providing comprehensive health care coverage to low-income, uninsured adult citizens with family incomes of 133 percent of the Federal Poverty Level, affording adult women health care coverage without being pregnant.²²
- b. The Behavioral Risk Surveillance Survey began gathering data on health care access for women of childbearing age to monitor the impact of the Healthy Michigan Plan and Affordable Care Act.
- c. The Michigan Child Collaborative Care Program at the University of Michigan expanded psychiatry support to primary care physicians who manage patients with mild to moderate behavioral health problems to include consultation services to health care providers of pregnant women.
- d. The Michigan Health and Hospital Association implemented an evidence-based Keystone Obstetrics Initiative to reduce maternal morbidity and mortality by preventing and treating post-partum hemorrhage. The Keystone Obstetrics Initiative impacts 80 percent of births.¹⁸
- e. The Women Infant and Children's Project FRESH Program provides fresh Michigan grown produce to low-income, nutritionally-at-risk consumers through the Michigan

Farmer's Markets. The Project assists at-risk pregnant and breast-feeding women to address their nutritional needs during this critical period.

- f. The Michigan Department of Health and Human Services released a Pregnancy Risk Assessment Monitoring System data report that highlighted oral health during pregnancy. The report, based on data from 2004 to 2008, indicated that nearly half of those that needed dental care during pregnancy did not receive that care.⁸
- g. A comprehensive *Perinatal Oral Health Action Plan* was developed, the result of the first perinatal oral health conference in Michigan.
- h. Three surveys measuring health care practitioners' perinatal oral health attitudes and practices have been completed and submitted for publication. Results indicate that less than a quarter of obstetricians performed an oral exam and discussed the importance of oral health. Half of nurse practitioners/midwives conduct an oral health exam.
- i. The Michigan Department of Health and Human Services and a taskforce of medical and dental professionals developed and published Michigan's perinatal oral health guidelines *During Pregnancy, the Mouth Matters: A Guide to Michigan Perinatal Oral Health*. These guidelines are designed as a tool for health care providers. Dissemination is a joint effort of the Michigan Department of Health and Human Services, professional organizations, and educational institutions.²³
- j. Perinatal oral health media messages were developed and radio public service announcement were disseminated across Michigan. During the implementation period of October 2014 through May 2015, all 138 Michigan Association of Broadcasters members played 18,411 messages. Web-based messages promoting supportive and relevant information were also developed for the general public and health professionals. During this time the Michigan Department of Health and Human Services Oral Health website informatics reported over 7,000 hits by over 3,470 unique visitors.
- k. The University of Detroit Mercy School of Dentistry and Wayne State University School of Medicine developed a pilot educational program that focuses on teaching obstetrics and gynecology residents the basics of an oral exam, with referral to dental student providers for treatment.
- l. Legislation, PA 197 of 201, was signed into law on June 2014 that assures mothers the right to breastfeed in public places.²⁴
- m. Michigan Medical Services Administration promulgated a new Medicaid policy expanding coverage of breast pumps.²⁵
- n. The number of Michigan birthing hospitals achieving the Baby Friendly USA, Inc. designation increased from one to ten by September 2015. Baby Friendly designation indicates the facility's entire operation is supportive of breastfeeding.
- o. The Women, Infant and Children Program implemented a breastfeeding peer counselor program, which provides services to women that include education, support and assistance for breastfeeding. In 2011, the United States Department of Agriculture first made federal funds available for this program.
- p. In October 2013, the Michigan Department of Health and Human Services began funding five high needs communities to implement the Michigan Adolescent

Pregnancy and Parenting Program. This program serves expectant and parenting teens ages 15-19 by providing strength-based, wrap around case management, and offering access to additional supports and services tailored to parenting teens and their families. The case management program, the Adolescent Family Life Program—Positive Youth Development, addresses various risk behaviors, the impact of trauma, and links teens to community resources and services to improve education, health, and social outcomes. By October 2014, the Michigan Department of Health and Human Services was funding programs in six communities.²⁶

- q. In partnership with the Michigan Department of Health and Human Services, the Michigan Organization on Adolescent Sexual Health launched the MI Healthy Family website to offer health information and statewide resources for teen parents, their supportive adults, and health professionals working with pregnant and parenting adolescents.

7. Reduce Unintended Pregnancies.

- a. The Michigan Department of Health and Human Services completed the periodic request for proposal process to identify local providers for the Title X Family Planning Program to assure continued statewide access to comprehensive, reliable, safe contraceptives and reproductive health care services. This process facilitates family planning services being available to teens, women, and men who have limited access to contraceptive services. During 2014, there were 80,490 individuals served.
- b. Teen pregnancy prevention efforts have been expanded to include an abstinence-only program, a comprehensive program, and a pregnant and parent teen program over the past five years.
- c. Strategies to reduce Michigan's teen pregnancy rate have contributed to the lowest teen pregnancy rate on record.
 - i. From 1990-2013 the teen pregnancy rate among females age 15-17 decreased 72 percent (61.8 to 17.5) and among females age 15-19, the rate decreased 61 percent during that same time (98.5 to 38.2)
 - ii. From 2005-2013 the teen pregnancy among white females age 15-17 decreased 44 percent (20.0 to 11.3) and among white females age 15-19, the rate decreased 34 percent during that same time (41.0 to 26.9)
 - iii. From 2005-2013 the teen pregnancy rate among black females age 15-17 decreased 31 percent (60.0 to 41.6) and among black females age 15-19, the rate decreased 16 percent during that same time (99.3 to 83.2)²⁷

8. Weave the social determinants of health into all targeted strategies to promote reduction of racial and ethnic disparities in infant mortality.

- a. The Practices to Reduce Infant Mortality through Equity project funded by the W. K. Kellogg Foundation provided professional guidance and resources to the Michigan Department of Health and Human Services staff to transform public health practice through equity and education. All staff in the Bureau of Maternal, Child and Family Health went through the social determinants of health and equity training. Local health departments and community-based organizations engaged in training.²⁸

- i. An organizational assessment was developed and administered to all staff in the Bureau of Maternal, Child and Family Health to identify strengths, challenges, and areas for growth related to staff's capacity to address and eliminate infant mortality disparities.
 - ii. Practices to Reduce Infant Mortality through Equity has partnered with 18 local health departments, Healthy Start projects, and community based organizations to form a local Learning Collaborative to reduce infant mortality by sharing best practices in addressing social determinants of health and institutional racism. Practices to Reduce Infant Mortality through Equity developed a Health Equity Learning Lab curriculum to guide staff in developing health equity work plans.
- b. The first Michigan Health Equity Status Report was published in partnership with the Michigan Health Disparities Reduction and Minority Health Section. The report focused on addressing the social determinants of health and the maternal and child health factors that impact infant mortality.²⁹
- c. The first Native American Pregnancy Risk Assessment and Monitoring Surveillance survey was completed. The survey was conducted to gather adequate perinatal health data on this subset of the maternal and infant population to correct previous underreporting.⁸
- d. A focused Behavioral Risk Factor Surveillance System survey was conducted among the Arab American population to better understand the risk factors and preventive behaviors affiliated with the cause of disease and disability.⁸
- e. Home visiting programs were expanded in ten communities with high infant mortality and high racial disparities, focusing outreach on first time mothers at highest risk for infant mortality. At-risk populations were identified for each community by using the Kitagawa formula. The analysis provided an unbiased, scientific method that identified high-risk populations within each county, which was used by local agencies to ensure that outreach was aimed at the highest risk populations. The analysis reinforced the concept that risk patterns differ between communities and provided each community its own unique results that guided outreach plans. Over time, the response has been positive, as the analysis has led to outreach to groups who may have been overlooked in the past. As a result, there has been an increase in enrollment in home visitation programs among populations at highest risk of poor birth outcomes.

In addition to these accomplishments and activities that are successfully impacting Michigan's birth outcomes, many communities around the state are implementing their own initiatives and activities to help support the health of the mothers and babies. The work of the Plan is to support and integrate community based projects more effectively.

Statewide Projects That Support Healthy Mothers and Babies

Extraordinary opportunities to improve the health and wellbeing of Michigan residents have resulted from numerous state and federal initiatives. These opportunities directly align with the efforts to improve the health of women and infants and can therefore reduce infant mortality. Michigan's implementation of the Affordable Care Act and the Healthy Michigan Plan has created improvements in the care and services provided to women before, during, after pregnancy.³⁰

In addition, the combined efforts of partnerships such as the Collaborative Improvement and Innovation Network, the State Innovative Model, and investments in proven, effective home visiting programs will continue to provide environmental and policy changes that strengthen and support Michigan's infrastructure for better maternal and infant health. In addition, the competitive request for proposals for the Comprehensive Health Care Program services for Michigan's Medicaid beneficiaries supports a population health model and includes quality improvement initiatives in the areas of maternal and child health.

Affordable Care Act

The Affordable Care Act was enacted in March 2010 to provide affordable coverage for all, with subsidies to those whose income is less than 400 percent of poverty, which is an approximate annual income of \$43,320 per year.³¹ It is important to note that young adults between the ages of 19 to 24 years were the most likely age group to be uninsured prior to passage of the Affordable Care Act and are among those most likely to become pregnant.³¹ Nearly 9 out of 10 women ages 18-44 years report using some health care services and having some health expenses during the year. Prior to the enactment of the Affordable Care Act, more than half of uninsured women age 18-44 reported going without or delaying needed care because they could not afford the cost.³²

The Affordable Care Act improves women's access to preventive health and to behavioral health services for mothers, babies, and families. As a result of the Affordable Care Act, women now have insurance coverage who had previously only qualified for Medicaid during pregnancy and did not have coverage for primary and preventive well woman visits and preconception care. Increased coverage during the reproductive years can improve access to a range of services to improve both birth outcomes and the health of women before, between, and beyond pregnancy. Importantly, as a result of the Affordable Care Act, women who have had poor birth outcomes in the past are able to receive interconception care or "between pregnancy" care to address risk factors to prevent poor pregnancy outcomes in the future and to improve health for future pregnancies.³¹

Healthy Michigan Plan

The Healthy Michigan Plan, Michigan's Medicaid expansion program that resulted from the Affordable Care Act, was launched on April 1, 2014. The central features of the Healthy Michigan Plan are to extend health care coverage to low-income Michigan citizens who are uninsured or underinsured and to improve quality care while addressing rising health care costs through a continued emphasis on value-based services. To enroll in the Healthy Michigan Plan, an individual

must be between the ages of 19 and 64, not currently eligible for Medicaid or Medicare, a citizen (or lawfully admitted to the United States), and have income less than 133 percent of the Federal Poverty Level. As of June 1, 2015, the Healthy Michigan Plan included more than 290,000 women, 85 percent of which are of childbearing age.²²

One of the primary goals of the Healthy Michigan Plan program is to include adequate prenatal and post-partum care to improve the health of the mother and baby. Michigan's overall goals for the Healthy Michigan Plan are as follows:

- Increase access to health care for uninsured or underinsured low-income Michigan citizens
- Improve access to preventive health care services
- Improve access to behavioral health services
- Improve care management and coordination across health and community services and supports

Other key features that support healthy mothers and healthy babies include, 1) incentives for healthy behaviors to encourage personal responsibility, 2) encouraging use of high-value services, and 3) promoting overall health and wellbeing.²²

Michigan Medicaid: Comprehensive Health Care Program

The Comprehensive Health Care Program for Michigan Medicaid beneficiaries released in 2015 describes the opportunities and requirements for Michigan's Managed Care health plans starting January 1, 2016. It is designed to improve the health of individuals receiving coverage through a population health management framework, and is designed to improve the health and care of beneficiaries by providing a wide array of primary and preventive care services. The Comprehensive Health Care Program includes an overarching emphasis on health promotion and disease prevention; incorporates community-based health and wellness strategies with a strong focus on addressing the social determinants; and supports efforts to build more resilient communities. The Comprehensive Health Care Program will focus on the prevention of chronic disease and care coordination, including access to behavioral health services for mothers, babies and families.

State Innovation Model: Michigan's Blueprint for Health Innovation

The State Innovation Model, with leadership from the State of Michigan, is a multi-payer initiative that will test innovations in health care payment and service delivery models to improve health and care, and decrease health care costs in Michigan.³³ The Center for Medicaid and Medicare Innovation has provided Michigan with financial and technical support to develop and test State Innovation Model through the creation of the Accountable Systems of Care and Community Health Innovation Regions. Accountable Systems of Care assure comprehensive and coordinated team-based medical and behavioral health care services for better care at lower cost. New payment models align incentives for better care and care coordination. Community Health Innovation Regions, which are cross-sector partnerships, address population health and partner to develop systems that connect patients with human services and community resources. The intent is to learn from the model test to achieve better health and care outcomes at lower cost for three populations of patients: at-risk pregnancy, individuals who are high utilizers of the emergency departments, and individuals with multiple chronic conditions. The model test provides the

opportunity to develop the necessary systems of care and infrastructure within communities across Michigan, which can support healthy mothers and babies, reducing infant mortality.³⁴

Infant Mortality Collaborative Improvement & Innovation Network

The Infant Mortality Collaborative Improvement & Innovation Network, supported by the United States Department of Health and Human Services Health Resources and Services Administration, is an innovative, collaborative approach to reduce infant mortality. This national initiative includes all states and territories in an effort to increase communication and sharing nationwide using the science of quality improvement and collaborative learning.³⁵ The Collaborative Improvement & Innovation Network brings together a cross section of leaders and national experts to learn from one another, share best practices, and track progress. This approach strengthens existing investments in maternal and infant health to accelerate improvement by developing new and innovative approaches through continuous learning, sharing of ideas, and quality improvement processes.

Michigan is participating in five national priority strategies to reduce infant mortality and to improve birth outcomes:³⁵

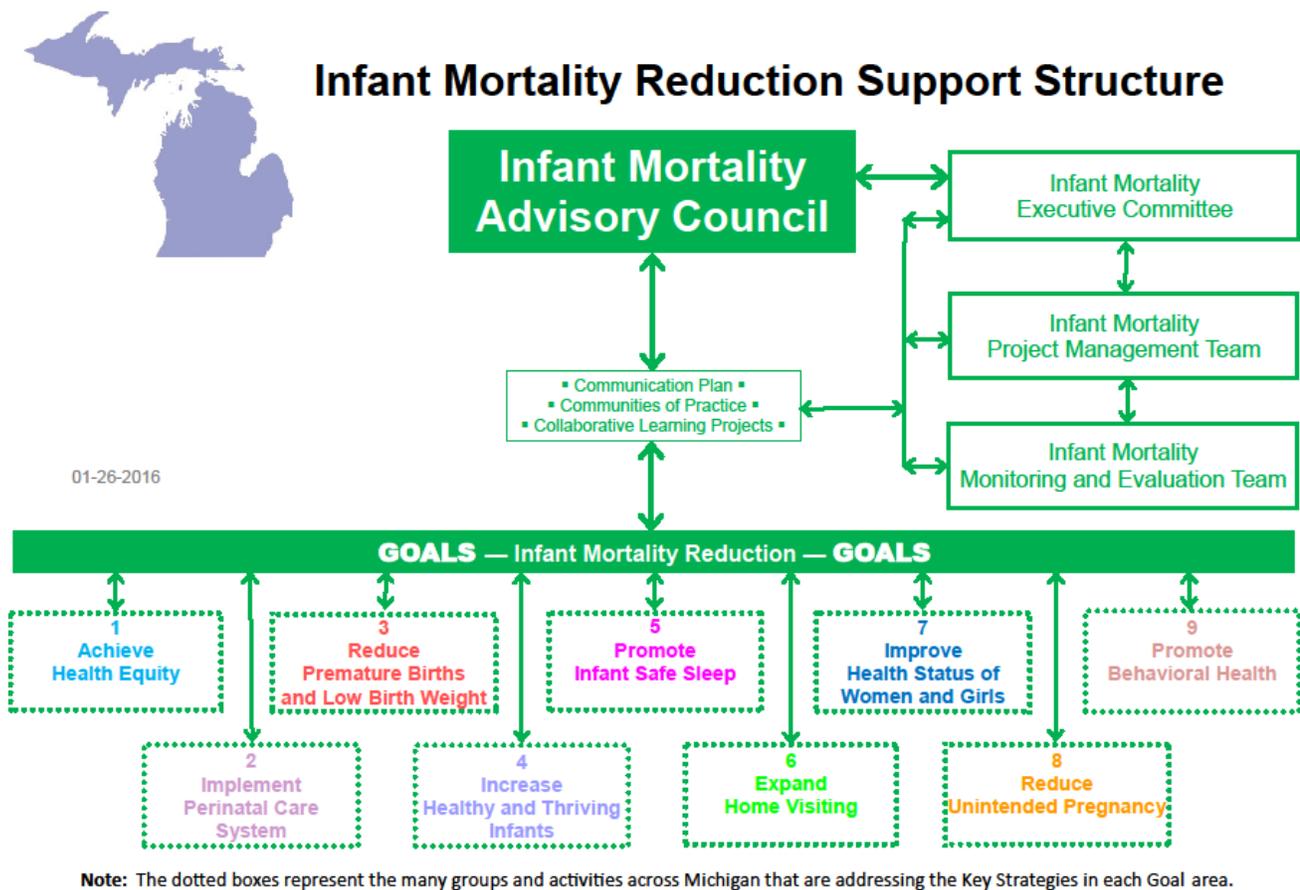
1. Reduce elective delivery at less than 39 weeks
2. Improve access to preconception and interconception care among women served by Medicaid (i.e. before and between pregnancy)
3. Improve the social determinants of health and achieve equity in birth outcomes, including the development of a Foundations for Practice for Health Equity Self-Assessment tool to assess capacity to address social determinants of health and advance health equity, initially to be used by state-level health departments
4. Promote safe sleep in order to reduce Sudden Infant Death Syndrome/Sudden Unexplained Infant Deaths
5. Expand perinatal regionalization

In summary, the 2016-2019 Infant Mortality Reduction Plan builds upon the accomplishments and activities of the 2012-2015 Plan, in the context of the many statewide projects that support mothers, babies, and their families. With the expanded scope of work, committee and workgroup structures have been restructured to more effectively support the goals and strategies of the new Plan.

Improved Infant Mortality Initiative Support and Restructuring

Figure 7 depicts the revised Michigan Department of Health and Human Services Infant Mortality leadership structure, which includes the following key committees necessary to carry out the charge of the 2016-2019 Infant Mortality Reduction Plan: Infant Mortality Advisory Council (formerly the Infant Mortality Steering Committee), Infant Mortality Executive Committee, Infant Mortality Project Management Team, and Infant Mortality Data and Evaluation.

Figure 7: 2016-2019 Infant Mortality Reduction Support Structure



Restructured Advisory Council and Supporting Work Teams

Infant Mortality Advisory Council

The Infant Mortality Advisory Council (formerly the Infant Mortality Steering Committee) executes the vision, mission, and goals of the Infant Mortality Reduction Plan and supports the action necessary for statewide involvement. The Council supports the engagement of the broader and more diverse group of stakeholders that are responsible to oversee implementation of the Plan, reviewing and monitoring outcome metrics established by Infant Mortality Data and Evaluation.

Team; continually monitoring and evaluating progress based on data; prioritizing and improving effective strategies; and seeking to identify, secure, and align resources.

Infant Mortality Executive Committee

The Infant Mortality Executive Committee oversees the 2016-2019 Infant Mortality Reduction Plan work and activities. The Committee is comprised of five permanent members, and three at-large members who will be appointed biennially. The Committee approves Advisory Council membership; supports effective public education strategies and communication across stakeholders; identifies key resource systems opportunities and barriers; and identifies legislative issues that impact and improve infant mortality outcomes in Michigan.

Infant Mortality Project Management Team

The Infant Mortality Project Management Team is comprised of internal Michigan Department of Health and Human Services staff with support from Michigan State University Institute for Health Policy. Others will participate over time as needed and as it is relevant to specific aspects of the work plan and initiatives. The team is responsible for drafting, implementing, and monitoring the overall Infant Mortality Reduction work plan activities and timelines. The team coordinates and collaborates with multiple agencies, individuals, groups, and programs that can impact the Infant Mortality Reduction Plan by managing the change process both internal and external to the Michigan Department of Health and Human Services.

Infant Mortality Monitoring and Evaluation Team

The Infant Mortality Monitoring and Evaluation Team is charged with developing the core indicators and Life Course metrics to be used across the scope of the Infant Mortality Reduction Initiative. It will work to align local project data collection with the core metrics. It will also support the data analyses needed to help both state and local stakeholders understand what the data means as it relates to progress on the core metrics, as well as the unique measures identified by each region/community. Other roles of the team include ensuring that the Infant Mortality Advisory Council and Executive Committee have the necessary data and analysis needed to evaluate the progress of the Plan and to make recommendations where improvement is needed.

New Project Elements

New project elements have been added to the 2016-2019 Plan to meet some identified gaps and needs. The new elements are:

- Developing a comprehensive and strategic Communication Plan
- Establishing formal Communities of Practice
- Implementing Learning Collaboratives

The new project elements were developed to support the goals and objectives described above. The new elements have been adopted for inclusion and are intended to engage a broad set of community partners, support community based activities, assist in aligning infant mortality activities across the state, and support the spread of knowledge and sustain improvement.

Communication Plan

In an effort to facilitate ongoing communication regarding the implementation of the Plan, a communication plan will be created to transmit information and receive information from infant mortality stakeholders across Michigan. The communication plan will be used to keep legislators, other public and private funders, and the citizens of Michigan abreast of the current state of infant mortality. In addition, it will relay information about reduction efforts. The intent of the communication is to keep all stakeholders focused on what it takes to improve birth outcomes in Michigan, and to engage funders and stakeholders in maintaining existing and expanding resources for the many facets of this complex issue.

Communities of Practice

Communities of Practice will provide opportunities for stakeholders across the state to work together in a process of collective learning and continuous improvement for broad dissemination of best practices to improve birth outcomes. Activities will include peer-to-peer communication and regular webinars/calls that are focused on each of the nine goals outlined in the 2016-2019 Plan. These will also provide a forum for discussion about best practices and how to improve birth outcomes. A Michigan Department of Health and Human Services staff member and community partners that are actively implementing local strategies will help guide the Communities of Practice webinars.

Learning Collaboratives

The Michigan Department of Health and Human Services and the Michigan Infant Mortality Advisory Council are committed to using ongoing evaluation methods and quality improvement processes to identify, test, and implement changes to improve health care processes across the state, reduce infant mortality, and work towards eliminating disparity in rates. To that end, statewide Learning Collaboratives will provide a forum for groups whose efforts are directed toward the goal of reducing premature birth and low birth weight to refine their continuous quality improvement skills. Participants should be familiar with the “Plan, Do, Study, Act” cycle of quality improvement and have the experience to implement and sustain this model over time.

With a focus on social determinants of health, participants will identify the strategies and/or practices they wish to improve. They will emphasize innovation, rapid-cycle testing in the field, and strategies to spread techniques to generate learning about how—and in which contexts—improvements are produced.³⁶

Summary

The State of Michigan is committed to assuring that *all* mothers and babies are healthy and thrive within communities that support their health and wellbeing. While Michigan has demonstrated progress in improving birth outcomes, the state has persistent disparities in birth outcomes and one of the worst rates of infant mortality in the country, ranking 8th in the nation for the highest number of infant deaths.

Building on the successes of the 2012-2015 Infant Mortality Reduction Plan, the Michigan Department of Health and Human Services, in collaboration with partners throughout the state, has created a roadmap for success. The 2016-2019 Infant Mortality Reduction Plan extends its scope beyond infant mortality to assure that mothers and fathers are healthy and that families are supported within communities that have the necessary resources and infrastructure to create the conditions for all babies to thrive throughout their lives. Through continued commitment, perseverance, data-driven priorities and strategies, and continuous learning and improvement, Michigan can be a healthy and safe place for all babies to be born and to thrive.

Notes

- 1 Infant Mortality Rates by State, Center for Disease Control and Prevention
http://www.cdc.gov/nchs/pressroom/sosmap/infant_mortality.htm or http://www.cdc.gov/nchs/pressroom/states/MI_2014.pdf
- 2 U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health, Defining Life Course <http://mchb.hrsa.gov/lifecourse/>
- 3 “Social Determinants of Health” World Health Organization (WHO) http://www.who.int/social_determinants/en/
- 4 Rethinking MCH: The Life Course Model as an Organizing Framework Concept Paper, U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. November 2010. Version 1.1.
<http://mchb.hrsa.gov/lifecourse/rethinkingmchlifecourse.pdf>
- 5 “Infant Mortality,” Center for Disease Control and Prevention
<http://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm>
- 6 Care W.H.O.C.C.i.P. & Care H.S.R.i.M.a.C (1987); Unintended pregnancy and infant mortality/morbidity; In R. Amler & H. Dull (Eds.), Closing the gap: The burden of unnecessary illness. New York: Oxford University Press
- 7 Institute of Medicine (IOM), Committee on Understanding Premature Birth and Assuring Healthy Outcomes. (eds RE Behrman and A Stith Butler) Preterm Birth: Causes, Consequences, and Prevention. Washington, DC: National Academies Press. 2006.
- 8 “What is PRAMS?” Centers for Disease Control and Prevention <http://www.cdc.gov/prams/>
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http://www.michigan.gov/mdhhs/0,5885,7-339-73971_4911_21428---,00.html
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- 12 Peck, M.G., Sappenfield, W.M. and Skala, J. (2010). Perinatal Periods of Risk: A community approach for using data to improve women and infant’s health
- 13 Sappenfield, W. M., Peck, M. G., Gilbert, C. S., Haynatzka, V. R., & Bryant, T. (2010). 3rd perinatal periods of risk: Analytic preparation and phase 1 analytic methods for investigating fetoinfant mortality. Maternal Child Health Journal. [Epub ahead of print].
- 14 Sappenfield, W. M., Peck, M. G., Gilbert, C. S., Haynatzka, V. R.,& Bryant, T. (2010). 3rd perinatal periods of risk: Phase 2 analytic methods for further investigating feto-infant mortality. Maternal Child Health Journal. [Epub ahead of print].
- 15 Michigan Act No. 291 Public Acts of 2012 (PA 291)
http://www.michigan.gov/documents/homevisiting/2012-PA-0291_434967_7.pdf
- 16 Effect of the Interval between Pregnancies on Perinatal Outcomes

Bao-Ping Zhu, M.D., Robert T. Rolfs, M.D., M.P.H., Barry E. Nangle, Ph.D., and John M. Horan, M.D., M.P.H. N Engl J Med 1999; 340:589-594 February 25, 1999 DOI: 10.1056/NEJM199902253400801

- 17 Statement of Endorsement, American Academy of Pediatrics (AAP) and American College of Obstetrics and Gynecologists (ACOG), Perinatal Level of Care Guidelines http://www.michigan.gov/documents/mdch/Statement_of_Endorsement-Perinatal_Leve_of_Care_Guidelines_422085_7.pdf
- 18 MDHHS, Certificate of Need Review (CON) Standards for Neonatal Intensive Care Services/Beds and Special Newborn Nursing Services https://www.michigan.gov/documents/mdch/CON-204_CON_Rev_Stds_NICU_Svcs_12.22.14_477794_7.pdf
- 19 MHA Keystone Center Obstetrics (OB) Initiative http://www.mha.org/keystone_center/collaboratives/ob.htm
- 20 Michigan Quality Improvement Consortium Guideline (MQIC), Routine Prenatal and Postnatal Care Guideline. http://www.mqic.org/pdf/mqic_routine_prenatal_and_postnatal_care_cpg.pdf
- 21 Michigan Act No. 122, Public Acts of 2014 <http://www.legislature.mi.gov/documents/2013-2014/publicact/pdf/2014-PA-0122.pdf>
- 22 Michigan Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program http://www.michigan.gov/homevisiting/0,5450,7-314-66229_69229_69232-332194--,00.html
- 23 Healthy Michigan Plan Program Information and History http://www.michigan.gov/mdhhs/0,5885,7-339-71547_2943_66797-314365--,00.html
- 24 Michigan Perinatal Oral Health Guidelines, "During Pregnancy, the Mouth Matters: A Guide to Michigan Perinatal Oral Health." https://www.michigan.gov/documents/mdch/Oral_Health_Guidelines_2015_498216_7.pdf
- 25 Michigan Act No. 197, Public Acts of 2014 <https://www.legislature.mi.gov/documents/2013-2014/publicact/pdf/2014-PA-0197.pdf>
- 26 Michigan Medicaid Policy, MSA 14-60, Expansion of Breast Pump Policy, Effective January 1, 2015 http://www.michigan.gov/documents/mdch/MSA-14-60_475298_7.pdf
- 27 Michigan Adolescent Pregnancy and Parenting Program (MI-APPP) <http://www.michigan.gov/tppi/0,3811,7-317-69568-336186--,00.html>
- 28 Michigan Resident Live Birth File, Division for Vital Records and Health Statistics, Michigan Department of Health and Human Services.
- 29 Michigan PRIME Practices to Reduce Infant Mortality through Equity <http://prime.mihealth.org/PRIME/HealthEquity.html>
- 30 MDHHS, Annual Health Equity Reports http://www.michigan.gov/mdhhs/0,5885,7-339-71550_2955_2985-273385--,00.html
- 31 Report of the Secretary's Advisory Committee on Infant Mortality (SACIM): Recommendations for Department of Health and Human Services (HHS) Action and Framework for a National Strategy. January, 2013. <http://www.hrsa.gov/advisorycommittees/mchbadvisory/InfantMortality/Correspondence/recommendationsjan2013.pdf>
- 32 Report of the Secretary's Advisory Committee on Infant Mortality (SACIM): Recommendations for Department of Health and Human Services (HHS) Action and Framework for a National Strategy. January, 2013. <http://www.hrsa.gov/advisorycommittees/mchbadvisory/InfantMortality/Correspondence/recommendationsjan2013.pdf>

- 33 Women and Health Care in the Early Years of the Affordable Care Act. Key Findings from the 2013 Kaiser Women's Health Survey, May 2014. <https://kaiserfamilyfoundation.files.wordpress.com/2014/05/8590-women-and-health-care-in-the-early-years-of-the-affordable-care-act.pdf>
- 34 Centers for Medicare and Medicaid Services (CMS) State Innovation Model (SIM). <http://innovation.cms.gov/initiatives/state-innovations/>
- 35 Michigan Department of Health and Human Services Blueprint for Health Innovation http://www.michigan.gov/documents/mdch/Michigan_Blueprint_APPENDICES_REMOVED_454499_7.pdf
- 36 U.S. Department of Health and Human Services. Health Resources and Services Administration (HRSA), Maternal and Child Health. Collaborative Improvement & Innovation Network to Reduce Infant Mortality. <http://mchb.hrsa.gov/infantmortality/coiin/>
- 37 The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement. IHI Innovation Series white paper. Boston: Institute for Healthcare Improvement; 2003. (Available on www.IHI.org)

Appendix A: Perinatal Periods of Risk

The goal of the *Perinatal Periods of Risk* is to use relevant data to prioritize and target prevention and intervention efforts. In contrast to other frameworks, *Perinatal Periods of Risk* measures the rate of both stillborn and infant deaths. The rationale is that there are nearly as many babies that are stillborn, as die in the first year of life. Therefore, to get a complete picture of poor birth outcomes, it is important to monitor both stillbirths and infant deaths. Sometimes when focusing on rates and numbers it is easy to lose sight of the fact that each of these deaths represents a profound loss to their parents and families. By including stillborn infants in these analyses, it is recognized that their families cherished each of these infants, and their families suffered no less of a loss than did families of infants who died prior to their first birthday. For the sake of these parents and families, it is important to learn from these tragic events and to develop strategies that assure that all babies are born healthy and thrive.

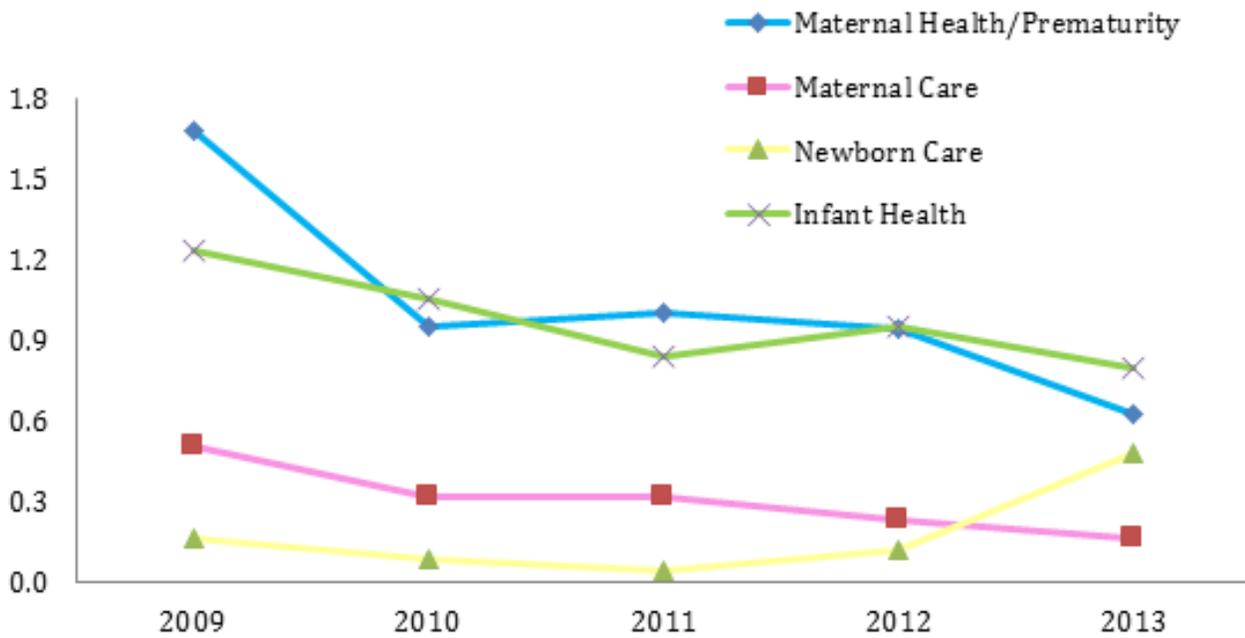
The perinatal period covers the lifespan that includes the mother's pregnancy and the infant through the first month of life. *Perinatal Periods of Risk* are divided into four categories of life stages including, 1) Maternal Health and Prematurity, 2) Maternal Care, 3) Newborn Care, and 4) Infant Health.

1. **Maternal Health and Prematurity:** The health of the mother is critical for a healthy full term baby. The points of intervention during the period of Maternal Health and Prematurity include strategies that improve health before pregnancy (including prevention and management of chronic diseases); support healthy behaviors; and ensure access to quality care before pregnancy. As described previously, adverse socioeconomic conditions limit healthy choices and place women and babies at risk for poor health and poor birth outcomes. Therefore, strategies should target social determinants of health and focus on creating the conditions that promote health and wellbeing of women, babies, and children.
2. **Maternal Care:** The second period of risk is Maternal Care. During this period the points of intervention include access to quality prenatal/obstetric care, and coordination of high-risk referrals. Optimal perinatal systems of care must be in place to identify and refer high-risk pregnancies for improved birth outcomes.
3. **Newborn Care:** Newborn Care is the third perinatal area defined in the Perinatal Periods of Risk and includes infants who died within the first 28 days of life. Points of intervention include strategies that improve perinatal management, neonatal care, and pediatric surgery. Other interventions include ensuring that high-risk pregnancies are delivered at appropriate facilities; that infants in need of advanced care are transferred to neonatal intensive care units in a timely manner; and that infants with special health care needs receive coordinated follow-up care.
4. **Infant Health:** The fourth period is Infant Health. This includes infants that survive to more than 28 days, (weighing at least 3.3 pounds at birth). Points of intervention during this period include strategies to reduce sleep-related deaths, injury prevention, and reduction in infections. Other interventions relate to encouraging breastfeeding and interventions to reduce parental smoking and to assure a smoke-free environment.

The measure of stillborn and infant deaths that is used is called the fetο-infant mortality rate. The fetο-infant mortality rate is calculated for each of the four perinatal periods and then compared to rates for the reference population. In this analysis the reference population was comprised of non-Hispanic White mothers in Michigan between the ages of 20-39 years, who intend to use private insurance, or who had more than a high school education.

Figure 8 shows the periods of risk for excess fetο-infant deaths from 2009 to 2013. Maternal Health/Prematurity (shown by the blue line) was the major contributor to preventable deaths, and has declined substantially since 2009. There has also been a decline in excess deaths during the period of Infant Health (shown by the green line). In 2013, most preventable deaths were occurring in the Infant Health period.

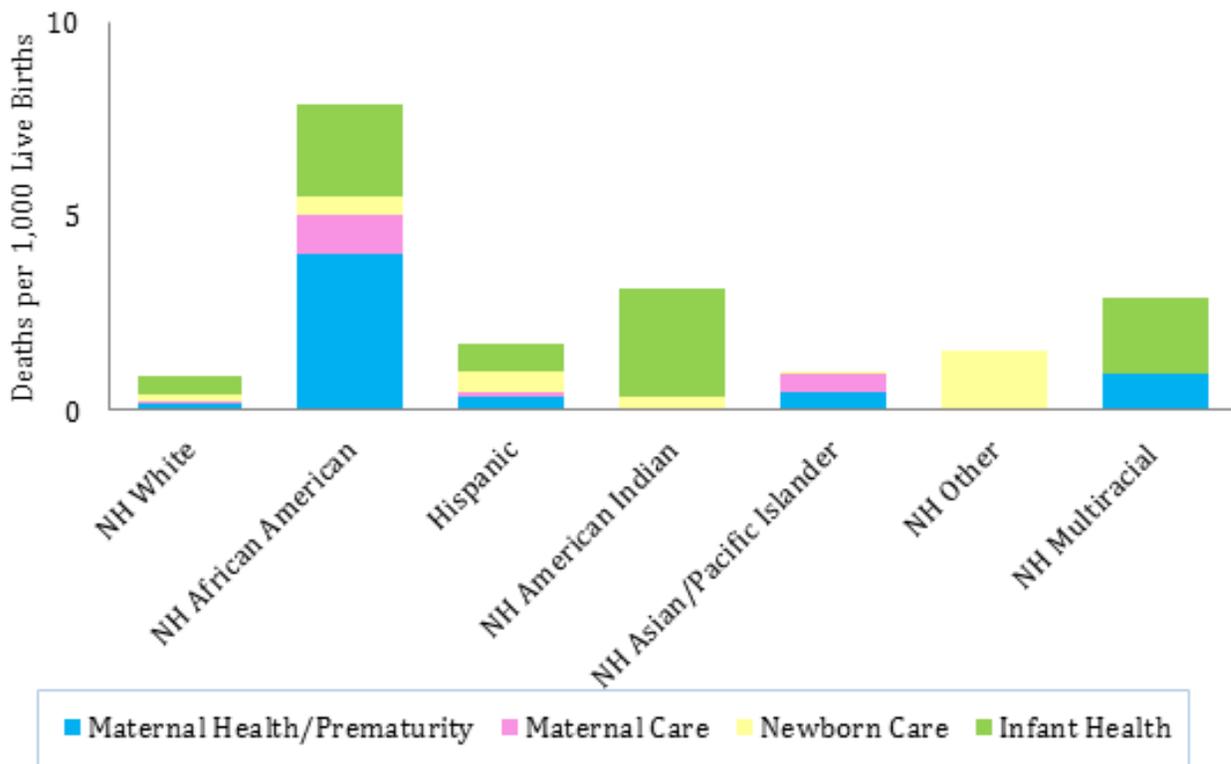
Figure 8: Excess Fetο-Infant Mortality Rate Trend by Perinatal Periods of Risk, Michigan, 2009-2013



* Source: Using Michigan reference: NH White, 20-<40 years old and (>13 years education or intending to use private insurance.)

While the overall excess mortality rate in Maternal Health/Prematurity has declined since 2009, Figure 9 shows the variation that exists between populations based on race and ethnicity. Babies born to African American women die from preventable causes at greater rates in all perinatal periods, including Maternal Care, Newborn Care, and Infant Health, with much of the excess risk within the Maternal Health/Prematurity period. This key finding suggests that there is a need for effective strategies related to each of the perinatal periods in the 2016-2019 Infant Mortality Reduction Plan, with special emphasis on improving maternal health among African American women. This includes strategies to improve health prior to pregnancy (including prevention and management of chronic diseases), supporting healthy behaviors, and ensuring access to quality perinatal care.

Figure 9. Excess Infant Mortality Rate by Race/Ethnicity by Perinatal Periods of Risk, Michigan, 2009-2013



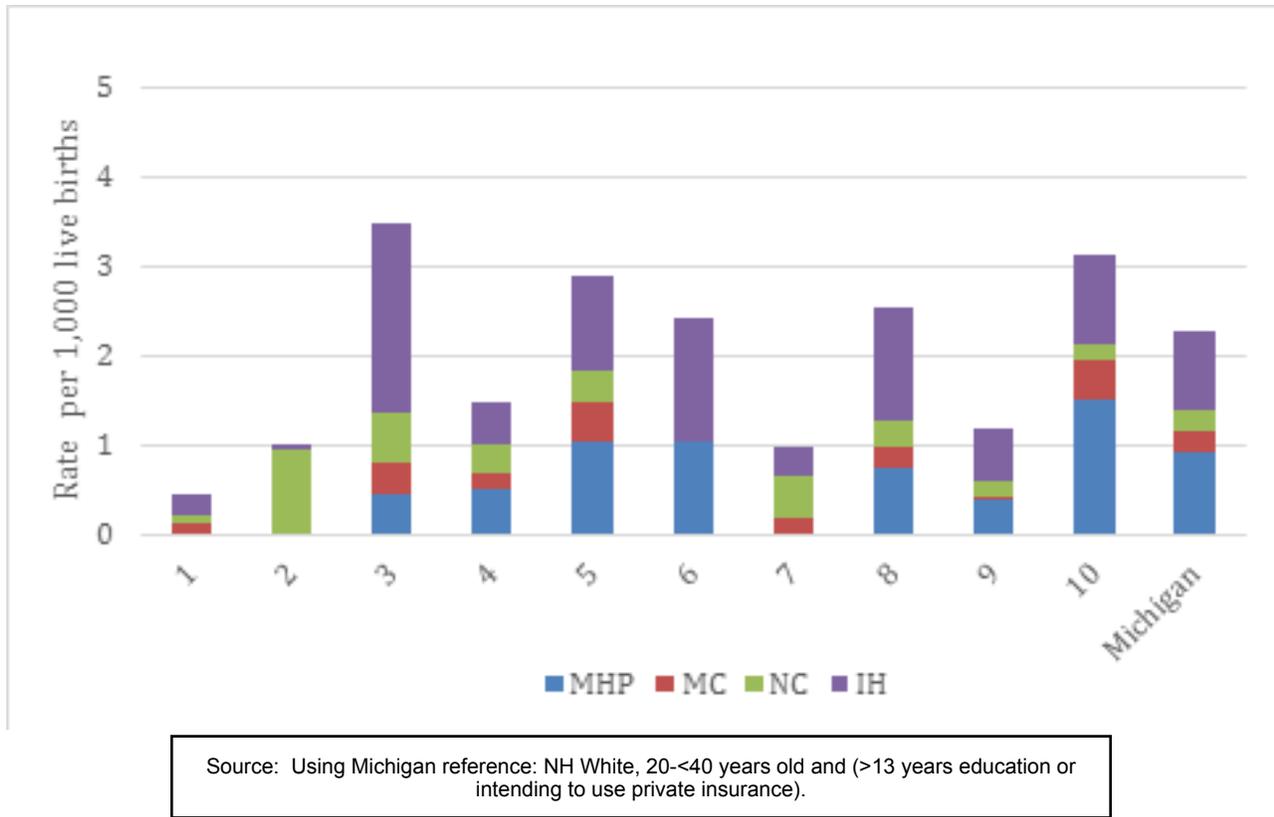
Source: Using Michigan reference: NH White, 20-<40 years old and >13 years education or intending to use private insurance.

As discussed in an earlier section, there has been a recent increase in infant deaths among the Hispanic population since 2012. The data from the Perinatal Periods of Risk show infant deaths over the past five years, which make it difficult to identify the factors that have contributed to the increase in fetoinfant deaths during 2012-2013. Going forward, additional data are needed to identify and address the recent rise in fetoinfant mortality among the Hispanic population.

Rates of excess fetoinfant death are also high among the American Indian populations, mostly during the Infant Health period. American Indian, Asian/Pacific Islander, and multi-racial populations are smaller populations, which creates challenges in interpreting data trends. Nonetheless, continued efforts to improve data systems and track these populations is important to identify unique risks and develop tailored strategies for each of these populations.

Perinatal Periods of Risk analysis can also be utilized to determine geographical areas of focus for specific periods of risk. This type of analysis is valuable for targeting efforts in geographical areas of Michigan that are experiencing a high number of infant deaths. Figure 10 displays Perinatal Periods of Risk for excess infant death by Prosperity Region.

Figure 10: Excess Feto-Infant Mortality Rate by Prosperity Region and Perinatal Period of Risk, Michigan, 2009-2013



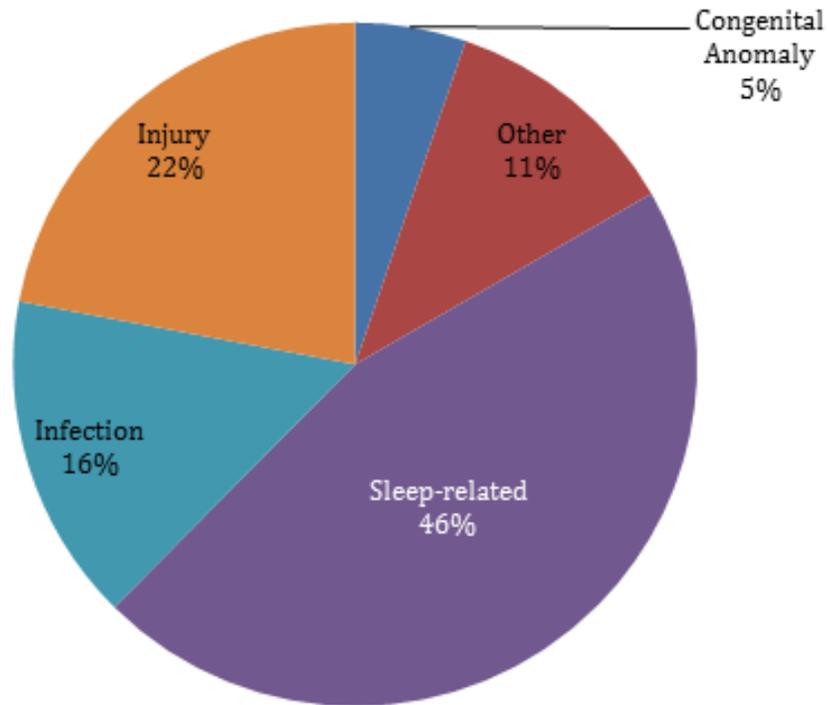
Key to Prosperity Regions

1. Upper Peninsula
2. Northwest Prosperity
3. Northeast
4. West Michigan
5. East Central Michigan
6. East Michigan
7. South Central
8. Southwest
9. Southeast
10. Detroit Metro

All of the regions have excess feto-infant mortality. Using *Perinatal Periods of Risk* can guide interventions for a more targeted geographical focus. Each of the Prosperity Regions has a unique set of risks based upon different conditions, infrastructure, support, and populations that require strategies tailored to the region. *Perinatal Periods of Risk* provides the data and approach to implement effective strategies in each region.

Figure 11 shows that in 2013 more than 50% of excess deaths (the difference between the state population and the reference population) occurring during the Infant Health period were due to sleep-related causes. , Sleep-related deaths, which are preventable, are a priority in the 2016-2019 Plan for improving birth outcomes.

Figure 11: Excess Cause-Specific Infant Mortality During the Infant Health Period, Michigan, 2013



*Infant deaths occurring 28 days to 1 year from birth and born > 20 weeks gestation and > 500 grams birth weight. Using Michigan 2013 reference: NH White, 20-<40 years old and (>13 years education or intending to use private insurance at delivery). Sleep related causes include: Sudden Unexplained Infant Death (SUIDS) includes Accidental Strangulation/Suffocation in Bed (ASSB-W75), Sudden Infant Death Syndrome (SIDS-R95) and Unknown (R99).

Perinatal Periods of Risk data are used to inform the public and communities partners about causes and risks of infant mortality. Ultimately, the analysis identifies the women and infants most at risk for poor birth outcomes in each community, guides effective strategies to decrease the number of fetal and infants deaths, and provides opportunities to assure that resources are available to those in need.

Appendix B

Michigan's 2016-2019 Infant Mortality Reduction Plan

Goal 1: Achieve health equity and eliminate racial and ethnic disparities by addressing social determinants of health in all infant mortality goals and strategies

- a. Apply a life course approach across systems
- b. Transform systems infrastructure to promote equity practices
- c. Allocate resources to support equity approaches
- d. Standardize data collection and analysis
- e. Utilize an equity lens in program standards and protocols
- f. Provide health equity training for all staff to improve knowledge and the skills needed to apply equity in all work
- g. Promote health equity among non-traditional partners, engaging all sectors that impact where we live, learn, work and play

Goal 2: Implement a perinatal care system

- a. Develop and support regional community-based perinatal care systems
- b. Support the transition from developmental assessment clinics to programs
- c. Prevent, identify, and treat neonatal abstinence syndrome and fetal alcohol spectrum disorders
- d. Promote breastfeeding initiation and reduce disparities
- e. Promote quality care improvement and standard safety protocols

Goal 3: Reduce premature births and low birth weight

- a. Promote adoption of policies to eliminate medically unnecessary deliveries before 39 weeks gestation
- b. Promote adoption of progesterone protocol for high-risk women
- c. Promote tobacco cessation including e-cigarettes, among pregnant women

Goal 4: Support increasing the number of infants who are born healthy and continue to thrive

- a. Promote involvement of fathers and males
- b. Identify child abuse and neglect risk and link to services
- c. Promote breastfeeding initiation and duration, and reduce disparities
- d. Promote family centered medical homes and well child visits including immunizations
- d. Promote newborn screening with follow-up and linkage to services
- e. Promote infant and early childhood developmental screening
- f. Promote sickle-cell disease treatment protocols during infancy
- g. Promote infant oral health

Goal 5: Reduce sleep related infant deaths and disparities

- a. Promote safer infant sleeping practices to prevent suffocation
- b. Develop and support culturally appropriate strategies for safe sleep practices
- c. Promote and integrate safe sleep education into all programs that serve pregnant women and families with infants

Appendix B

Goal 6: Expand home visiting and other support programs to promote healthy women and children

- a. Support and link to promising home visiting programs, such as Healthy Start
- b. Support collaboration and link support programs across health care and community based services
- c. Improve the effectiveness of outreach to high need populations, and improve the duration of enrollment in high quality Home Visiting programs

Goal 7: Support better health status of women and girls

- a. Prevent and manage chronic conditions
 - i. Reduce maternal mortality and disparity
 - ii. Reduce maternal morbidity and disparity
 - iii. Reduce incidence of obesity in women and girls
 - iv. Reduce incidence of and severity of diabetes in women of childbearing age
- b. Implement Michigan's Perinatal Oral Health Plan
 - i. Promote provider education among medical and dental professionals
 - ii. Identify and promote policies that support perinatal oral health
- c. Promote and build healthy living skills in students through education and empowerment
 - i. Promote positive communication and health literacy skills through evidence-based comprehensive health education curricula
 - ii. Support healthy decision-making and problem-solving skills through evidence-based comprehensive health education programming
- d. Promote women's health
 - i. Improve the rate and content of postpartum visits
 - ii. Promote adolescent well-checks
 - iii. Promote immunizations for adolescents and pregnant women
 - iv. Promote preconception and interconception counseling
 - v. Promote access to healthy foods, WIC services and nutrition education
- e. Promote maternal health
 - i. Support healthier pregnancies
 - ii. Promote folic acid use among women of childbearing age before and during pregnancy to help prevent birth defects
 - iii. Promote the prevention of birth defect
 - iv. Promote screening and treatment of sexually transmitted infections

Goal 8: Reduce unintended pregnancies

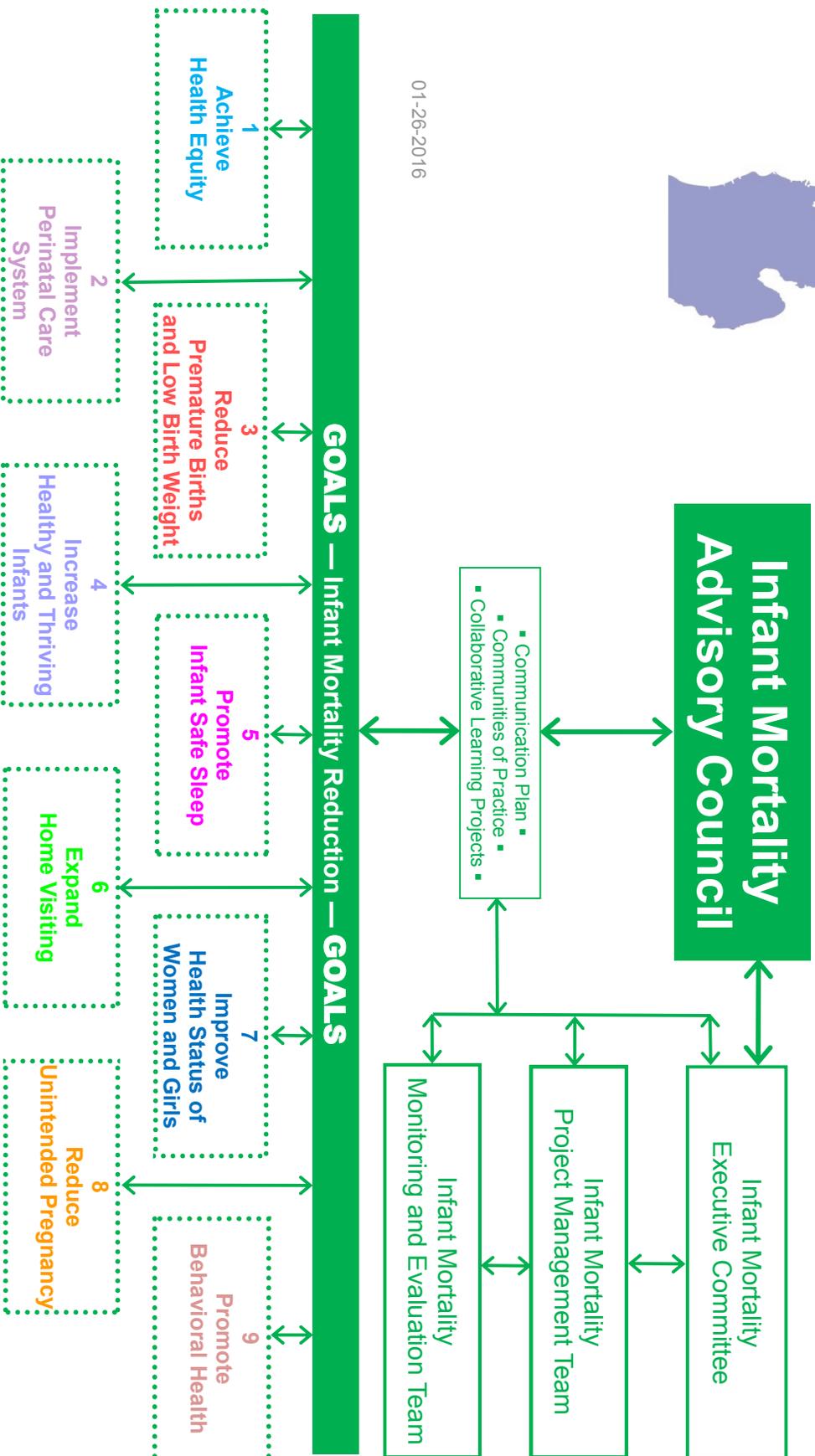
- a. Promote healthy birth spacing (at least 18 months between pregnancies)
- b. Improve the rate of pregnancies that are intended
- c. Expand evidence-based teen pregnancy prevention programs
- d. Promote reproductive planning for all childbearing-aged adults as a component of primary care and promote access to reproductive health services

Goal 9: Promote behavioral health services and other programs to support vulnerable women and infants

- a. Promote social and emotional screening of women, infants, children and adolescents and link to follow-up mental health and substance use disorder services
- b. Identify interpersonal violence in dating/relationship abuse among adolescents and women, and link to services
- c. Identify and reduce the impact and incidence of trauma and toxic stress and link to services



Infant Mortality Reduction Support Structure



01-26-2016

Note: The dotted boxes represent the many groups and activities across Michigan that are addressing the Key Strategies in each Goal area.

Infant Mortality Advisory Council Charter

VISION:

To create an environment in which every Michigan baby is born healthy and ready to thrive in a safe and nurturing family within local communities and systems that promote equity.

MISSION:

Improve infant health outcomes and eliminate disparity in infant mortality by mobilizing public and private partners to address social determinants of health, promote evidence-based practices, and improve systems of care for women of childbearing age, infants, and families.

PURPOSE:

The Infant Mortality Advisory Council's purpose is to support the development and implementation of Michigan's Infant Mortality Reduction Plan (IMRP). The Advisory Council pursues a shared vision and mission across the sectors and systems represented on the Council, and it exists to advise, assist, and promote statewide collaborative improvement efforts to reduce infant mortality.

CHARGE:

Over the next three years, the Advisory Council members will pursue its vision and mission through the following activities:

1. Eliminate racial, ethnic, economic, and geographic disparities in infant mortality by addressing social determinants of health across all targeted IMRP strategies.
2. Engage a broader and more diverse group of stakeholders to implement the IMRP
3. Develop a deliberate and strategic communication plan
4. Review and monitor outcome metrics established by IM Data and Evaluation Team
5. Prioritize strategies by continually monitoring and evaluating progress based on data
6. Support the creation of specific work plans for each IMRP strategy that can guide and inform community-based work plans
7. Identify, secure and align resources based on needs and disparities

MEMBERSHIP:

As a statewide initiative, MDHHS recognizes the importance of collaborating with key stakeholders that include individuals and organizations with the knowledge, expertise and ability to impact maternal and child health in Michigan. Members are expected to be actively involved in implementing, executing, and evaluating the IMRP work plan that is relevant to their organization and professional expertise. In addition, members are being asked to actively advocate the IMRP initiatives within their work place and/or professional community. Advisory Council members commit their time and expertise in support of the Council's mission, and take responsibility for identifying connections between their professional/organizational role and the strategies outlined in the IMRP. Advisory Council members attend Council meetings and, participate in additional workgroups as needed.

Members will serve for a minimum of three years, unless either the individual or IMEC requests to end the tenure. Term may be renewed when requested in writing prior to term expiring.

Appendix D

Advisory Council Membership criteria:

- Council Chair/Co-Chair
- MDHHS staff (MCH, Medicaid, & Policy Staff)
- Health systems
- Health plans (Medicaid & Commercial Medical and QI Directors)
- Community-based and statewide agencies/organizations (MPHI, MPCA, MHA...)
- Academic/ University
- Practicing clinicians
- Relevant personal and/ or subject matter expert
- Other _____

Members will be invited to participate on the IMAC by MDHHS or can be nominated by individuals/ organizations. To assist MDHHS with council selection all members will be asked annually to complete a web based survey describing their expertise and current work related to the IMRP and to sign a participation agreement.

MEETINGS:

The Advisory Council meets on a quarterly basis during a 2-4 hour timeframe depending on the agenda. To meet this goal of active council participation, members will be expected to attend Council meetings in-person at least three a year and/or participate via live webinar. IMAC members will be provided an agenda and documents/materials for review prior to each meeting. Members are expected to notify IMAC staff in advance if they are unable to attend a meeting.

LINES OF AUTHORITY:

The IMAC will be an advisory group to MDHHS. The group does not have decision authority but are expected to review and provide guidance to MDHHS as it pertains to key programs and initiatives within the scope of Michigan's Infant Mortality Reduction Plan.

MEASURES OF SUCCESS:

The accomplishments of the Advisory Council will be measured by the following:

1. During year one, all IMRP work advocates and promotes health equity.
2. Council members reflect the membership criteria outline in the charter.
3. Communicate, implement and monitor work plan.
4. Review and approve IM Data and Evaluation Team metrics and provide data to support the evaluation, as appropriate.
5. Documentation that every council member facilitates incorporation of an IMRP strategy into a local community based work plan.
6. 75% in-person or web based meeting attendance.

