Appendices
2020-2023 MIHEIP

MOTHER INFANT HEALTH & EQUITY IMPROVEMENT PLAN

TOGETHER, SAVING LIVES

Table of Contents

Glossary

Health disparities	Differences in the health status of different groups due to inequity.
Infant mortality	The death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births
Low birthweight	Refers to an infant weighing less than 2,500 grams (five pounds, eight ounces) at birth.
Maternal mortality	The death of a woman during pregnancy, at delivery, or within a year after the end of her pregnancy.
Neonatal period	The first four weeks after birth.
Pregnancy-associated death	The death of a woman while pregnant or within one year of pregnancy, irrespective of cause.
Pregnancy-related death	The death of a woman while pregnant or within one year of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by her pregnancy or its management, but not from accidental or incidental causes.
Preterm/Premature	Refers to an infant born before 37 weeks' gestation.
Sleep-related death	The death of an infant less than one year of age that occurs suddenly and unexpectedly and includes sudden infant death syndrome (SIDS), undetermined/sudden unexplained infant death (SUID), suffocation/positional asphyxia and other causes wherein the sleep environment was likely to have contributed to the death.

Appendix A: Causes of Pregnancy-Related Death

Definitions of the leading causes of pregnancy-related deaths in Michigan (Mayo Clinic, 2018)

Cause of Death	Definition
Amniotic fluid embolism	An obstetric emergency in which amniotic fluid enters the mother's bloodstream.
Cardiomyopathy	A disease of the heart muscle that makes it harder for your heart to pump blood to the rest of your body.
Cardiovascular conditions	Conditions that involve narrowed or blocked blood vessels, the heart muscle, valves, or rhythm.
Cerebrovascular conditions	Conditions that alter the blood supply to the brain.
Hemorrhage	Profuse blood loss.
Maternal hypertension	High blood pressure during and after pregnancy.
Sepsis	The body's response to an infection, triggering changes that can damage multiple organ systems.
Thrombotic/other embolism	Obstruction of an artery, typically by a clot of blood or an air bubble.

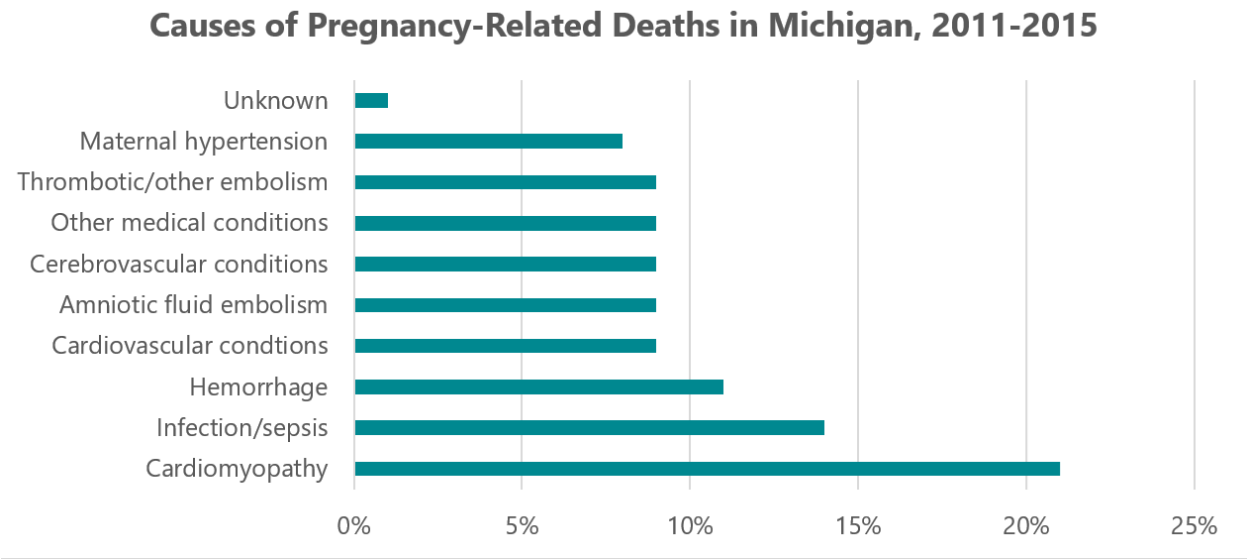
Appendix B: 2020 Maternal Infant Strategy Group Members

Name	Title	Affiliation
Matthew Allswede, MD	Program Director Obstetrics, Gynecology and Reproductive Biology Residency	Sparrow Women's Health
Vernice Anthony, RN, MPH	CEO	VDA Health Connect
John Barks, MD	Neonatologist	University of Michigan Hospital and Health Centers
Colleen Barry, MD	Chief Pediatric Medical Consultant, Children's Special Health Care Services	MDHHS
Charles Barone, MD	Chair, Department of Pediatrics	Henry Ford Health Systems
Brittany Bogan, FACHE, CPPS	Senior Vice President of Safety and Quality	Michigan Health and Hospital Association Keystone Center
Nicki Britten, MPH	Health Officer	Berrien County Health Department
Renee Canady, PhD	CEO	MPHI
Debra Darling	Director, Quality Improvement Programs	MSU Institute for Health Policy
Patricia Ferguson, MD, FACOG	Physician Consultant	BCBSM PPO & Care Management
Stephanie Flom, MD	Medical Director	Meridian Health
James Forshee, MD	Chief Medical Officer and Senior Vice President of Medical Affairs	Priority Health
Cheryl Gibson-Fountain, MD	President of Michigan State Medical Society (MSMS)	Beaumont Health
Kiddada Green, MAT	Founding Executive Director	Black Mothers' Breastfeeding Association
Herman Gray, MD	Chair, Department of Pediatrics	Wayne State University

Sonia Hassan, MD	Associate Vice President, Founder, Office of Women's Health	Wayne State University
Teresa Holtrop, MD	President	Michigan Chapter American Academy of Pediatrics
Lisa Kane Low, PhD, CNM, FACNM, FAAN	Associate Dean Practice and Professional Graduate Programs, Associate Professor, Department of Obstetrics and Gynecology	University of Michigan School of Nursing
Joneigh S. Khaldun, MD, MPH, FACEP	Chief Medical Executive Chief Deputy Director for Health	MDHHS
Elizabeth Kushman, MPH	Manager, Maternal, Infant & Early Childhood Services	Inter-Tribal Council of MI
Cheryl Larry-Osman, RN, MS	Perinatal Clinical Nurse Specialist	Henry Ford Hospital
Lisa Peacock, RN, MSN	Health Officer	Benzie-Leelanau District Health Dept
Ninah Sasy, MSA	Senior Maternal Child Health Strategist	MDHHS
Dawn Shanafelt, MPA, BSN, RN	Director, Division of Maternal and Infant Health	MDHHS
Robert Sokol, MD	Dean, Emeritus and Distinguished Professor, Emeritus, Departments of Obstetrics and Gynecology and Physiology	Wayne State University School of Medicine
Amy Zaagman, MPA	Executive Director	Michigan Council for Maternal and Child Health

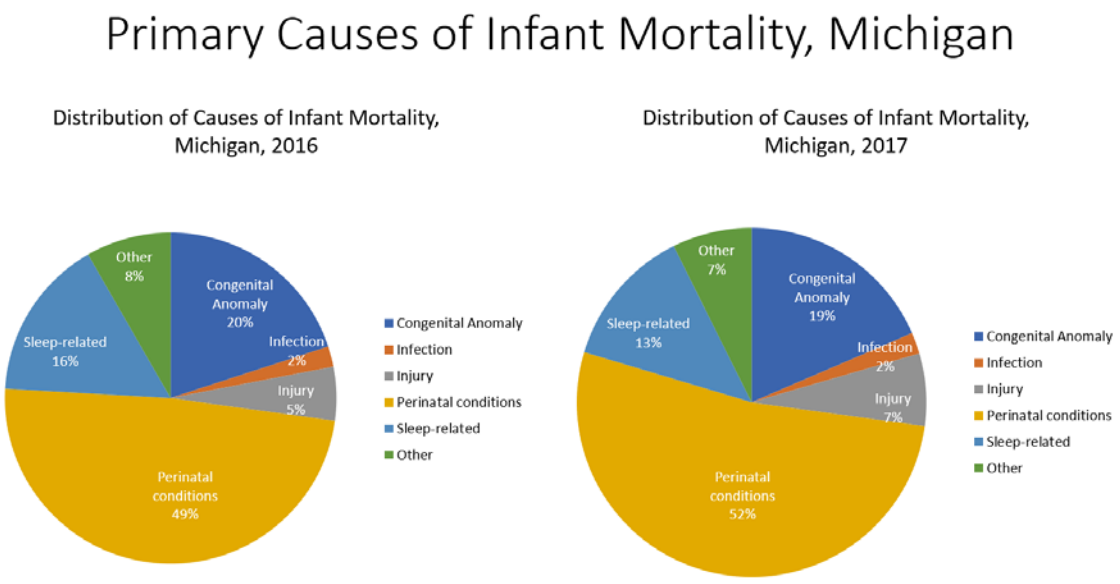
Appendix C: Maternal and Infant Mortality Data

Graphic 1: Primary Causes of Pregnancy-Related Deaths in Michigan, 2011-2015



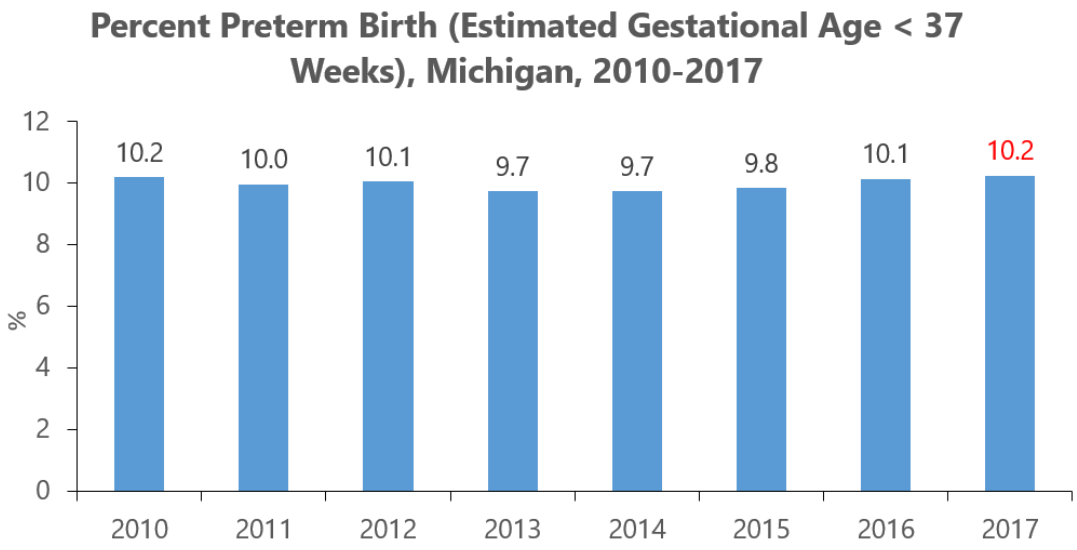
Pregnancy-related death is the death of a woman while pregnant or within a year of the end of a pregnancy from any cause related to or aggravated by the pregnancy or its management. Data source: Michigan Maternal Mortality Surveillance Program, Maternal Deaths in Michigan, 2011-2015

Graphic 2: Primary Causes of Infant Deaths in Michigan, 2016-2017



Source: MDHHS, Division of Vital Records and Health Statistics

Graphic 3: Percent Preterm Birth (Estimated Gestational Age <37 Weeks), Michigan, 2010-2017



Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation. Source: MDHHS, Division of Vital Records and Health Statistics

Appendix D: Data Sources

MDHHS Division for Vital Records and Health Statistics

The Michigan Department of Health and Human Services Division for Vital Records and Statistics serves as an important source of statistical information. Vital statistics data collected from records includes births, deaths, events, rates, and detailed cross tabulations. Statistical information for Michigan with national comparisons is included, along with extensive data at the county and community level.

Pregnancy Risk Assessment Monitoring System (PRAMS)

PRAMS is a program that, with coordination from the Centers for Disease Control and Prevention (CDC), helps gather data about moms' health before, during, and after their pregnancy. The PRAMS survey was developed in 1987 in cooperation with the CDC. Michigan was one of the first states to participate in PRAMS. The PRAMS survey is revised every three to five years and each revision is referred to as a survey phase.

Michigan Maternal Mortality Surveillance Program (MMMS)

The maternal death review process was organized in Michigan in 1950 as a collaborative effort between the former Michigan Department of Community Health (MDCH), the Committee on Maternal and Perinatal Health of the Michigan State Medical Society (MSMS), and the chairs of the Departments of Obstetrics and Gynecology of the medical schools in Michigan. Today, Michigan's maternal mortality review is a state-level structured process by which two multidisciplinary committees identify and review cases of maternal death that occur during pregnancy, at delivery, or within one year of pregnancy. The medical review committee is focused on reviewing medical causes of death in pregnant and postpartum women, and the injury review committee focuses on reviewing accidental causes of death including substance-related deaths, homicides, suicides, and motor vehicle accidents. The medical and injury committees are made up of multidisciplinary representatives from around the state in fields including public health, obstetrics and gynecology, maternal-fetal medicine, nursing, midwifery, forensic pathology, mental health and behavioral health. The Michigan Public Health Code and other state laws facilitate access to medical records, ensure confidentiality, and protect case information, committee members, review proceedings, and findings from subpoena and legal actions. With the support of these laws, the review committees have access to multiple sources of information that provide a deeper understanding of the circumstances surrounding each maternal death and allow them to develop action recommendations to reduce the occurrence of preventable future deaths.

Appendix E: List of Acronyms and Abbreviations

ACOG	The American College of Obstetricians and Gynecologists
AIM	Alliance for Innovation on Maternal Health
LARC	Long-Acting Reversible Contraceptive
MI AIM	Michigan Alliance for Innovation on Maternal Health
MICCA	Michigan Collaborative for Contraceptive Access
MIHEC	Maternal Infant Health and Equity Collaborative
MIHEIP	Mother Infant Health and Equity Improvement Plan
MISG	Maternal Infant Strategy Group

Appendix F: MI AIM Safety Bundle Fact Sheet

PATIENT SAFETY BUNDLE

Obstetric Hemorrhage

READINESS

Every unit

- Hemorrhage cart with supplies, checklist, and instruction cards for intrauterine balloons and compressions stitches
- Immediate access to hemorrhage medications (kit or equivalent)
- Establish a response team - who to call when help is needed (blood bank, advanced gynecologic surgery, other support and tertiary services)
- Establish massive and emergency release transfusion protocols (type-O negative/uncrossmatched)
- Unit education on protocols, unit-based drills (with post-drill debriefs)

RECOGNITION & PREVENTION

Every patient

- Assessment of hemorrhage risk (prenatal, on admission, and at other appropriate times)
- Measurement of cumulative blood loss (formal, as quantitative as possible)
- Active management of the 3rd stage of labor (department-wide protocol)

RESPONSE

Every hemorrhage

- Unit-standard, stage-based, obstetric hemorrhage emergency management plan with checklists
- Support program for patients, families, and staff for all significant hemorrhages

REPORTING/SYSTEMS LEARNING

Every unit

- Establish a culture of huddles for high risk patients and post-event debriefs to identify successes and opportunities
- Multidisciplinary review of serious hemorrhages for systems issues
- Monitor outcomes and process metrics in perinatal quality improvement (QI) committee

Standardization of health care processes and reduced variation has been shown to improve outcomes and quality of care. The Council on Patient Safety in Women's Health Care disseminates patient safety bundles to help facilitate the standardization process. This bundle reflects emerging clinical, scientific, and patient safety advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed. Although the components of a particular bundle may be adapted to local resources, standardization within an institution is strongly encouraged.

The Council on Patient Safety in Women's Health Care is a broad consortium of organizations across the spectrum of women's health for the promotion of safe health care for every woman.

May 2015

For more information visit the Council's website at www.safehealthcareforeverywoman.org

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

safe health care for every woman

PATIENT SAFETY BUNDLE

Hypertension

READINESS

Every Unit

- Standards for early warning signs, diagnostic criteria, monitoring and treatment of severe preeclampsia/eclampsia (include order sets and algorithms)
- Unit education on protocols, unit-based drills (with post-drill debriefs)
- Process for timely triage and evaluation of pregnant and postpartum women with hypertension including ED and outpatient areas
- Rapid access to medications used for severe hypertension/eclampsia: Medications should be stocked and immediately available on L&D and in other areas where patients may be treated. Include brief guide for administration and dosage.
- System plan for escalation, obtaining appropriate consultation, and maternal transport, as needed

RECOGNITION & PREVENTION

Every Patient

- Standard protocol for measurement and assessment of BP and urine protein for all pregnant and postpartum women
- Standard response to maternal early warning signs including listening to and investigating patient symptoms and assessment of labs (e.g. CBC with platelets, AST and ALT)
- Facility-wide standards for educating prenatal and postpartum women on signs and symptoms of hypertension and preeclampsia

May 2015

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

safe health care for every woman

PATIENT SAFETY BUNDLE

Hypertension

RESPONSE

Every case of severe hypertension/preeclampsia

- Facility-wide standard protocols with checklists and escalation policies for management and treatment of:
  - Severe hypertension
  - Eclampsia, seizure prophylaxis, and magnesium over-dosage
  - Postpartum presentation of severe hypertension/preeclampsia
- Minimum requirements for protocol:
  - Notification of physician or primary care provider if systolic BP =/> 160 or diastolic BP =/> 110 for two measurements within 15 minutes
  - After the second elevated reading, treatment should be initiated ASAP (preferably within 60 minutes of verification)
  - Includes onset and duration of magnesium sulfate therapy
  - Includes escalation measures for those unresponsive to standard treatment
  - Describes manner and verification of follow-up within 7 to 14 days postpartum
  - Describe postpartum patient education for women with preeclampsia
- Support plan for patients, families, and staff for ICU admissions and serious complications of severe hypertension

REPORTING/SYSTEMS LEARNING

Every unit

- Establish a culture of huddles for high risk patients and post-event debriefs to identify successes and opportunities
- Multidisciplinary review of all severe hypertension/eclampsia cases admitted to ICU for systems issues
- Monitor outcomes and process metrics

Note: "Facility-wide" indicates all areas where pregnant or postpartum women receive care. (E.g. L&D, postpartum critical care, emergency department, and others depending on the facility).

Standardization of health care processes and reduced variation has been shown to improve outcomes and quality of care. The Council on Patient Safety in Women's Health Care disseminates patient safety bundles to help facilitate the standardization process. This bundle reflects emerging clinical, scientific, and patient safety advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed. Although the components of a particular bundle may be adapted to local resources, standardization within an institution is strongly encouraged.

The Council on Patient Safety in Women's Health Care is a broad consortium of organizations across the spectrum of women's health for the promotion of safe health care for every woman.

May 2015

For more information visit the Council's website at www.safehealthcareforeverywoman.org

Appendix G: MIHEIP Town Hall Meeting Summaries

Executive Summary

Throughout the summer of 2018, the Mother Infant Health and Equity Improvement Plan team hosted a series of five town hall meetings throughout the state. The purpose of the town hall meetings was to collect feedback from communities to determine perceived priorities and barriers to successful MIHEIP implementation.

Northern MI Town Hall Meeting | June 20, 2018 | Grayling, Michigan

More than 60 people came together to provide feedback on the MIHEIP:
38% public health | 20% clinician | 16% community members | 26% other*
*Included nonprofits, health plan representatives, community educators, and university/academic

Northern MI participants expressed the need for better clinical-community linkages and more community outreach. Northern MI wanted to address social determinants of health. Also, participants thought it would be important to involve providers, particularly with new ACOG recommendations.

Northern MI participants perceive the Medicaid work requirement as a barrier to accessing care and believe it should be addressed through MIHEIP efforts. They also emphasized step-by-step outline for the community to follow for successful implementation

West/Southwest Michigan Town Hall Meeting | July 25, 2018 | Grand Rapids, Michigan, with a satellite meeting in Kalamazoo

More than 165 people came together to provide feedback on the MIHEIP:
22% public health | 44% clinicians | 17% community members | 17% other*
*Included nonprofits, educators, health plan representatives, and health consultants

West/Southwest MI participants agreed on the importance of having better representation from populations most affected by maternal-infant morbidity and mortality. Like other groups, West/Southwest MI was concerned about addressing Social Determinants of Health. West/Southwest MI participants described mistrust and stigma due to cultural and socioeconomic differences, and suggested building relationships with mothers and letting mothers be the driving force for change.

Southeast Michigan Town Hall Meeting | August 16, 2018 | Detroit, Michigan with a satellite meeting in Ann Arbor

More than 200 people came together to provide feedback on the MIHEIP:
32% public health | 38% clinicians | 20% community members | 10% other*
*Included QI consultants, nonprofits, health plan representatives, and university/academic

Southeast MI identified the need to include mother's champions including fathers, aunts, grandmothers, caregivers, etc. in interventions. Racism and Social Determinants of Health were also major concerns for this region, as were reducing unplanned pregnancies. Participants stressed the importance of the plan being inclusive of all groups, and thought it was important to incorporate legislative efforts with the improvement plan.

Upper Peninsula Town Hall Meeting | September 10, 2018 | Marquette, Michigan

More than 50 people came together to provide feedback on the MIHEIP:
40% public health | 35% clinician | 14% community members | 11% other*
*Included health plan representatives, a city commissioner, and nonprofit representatives

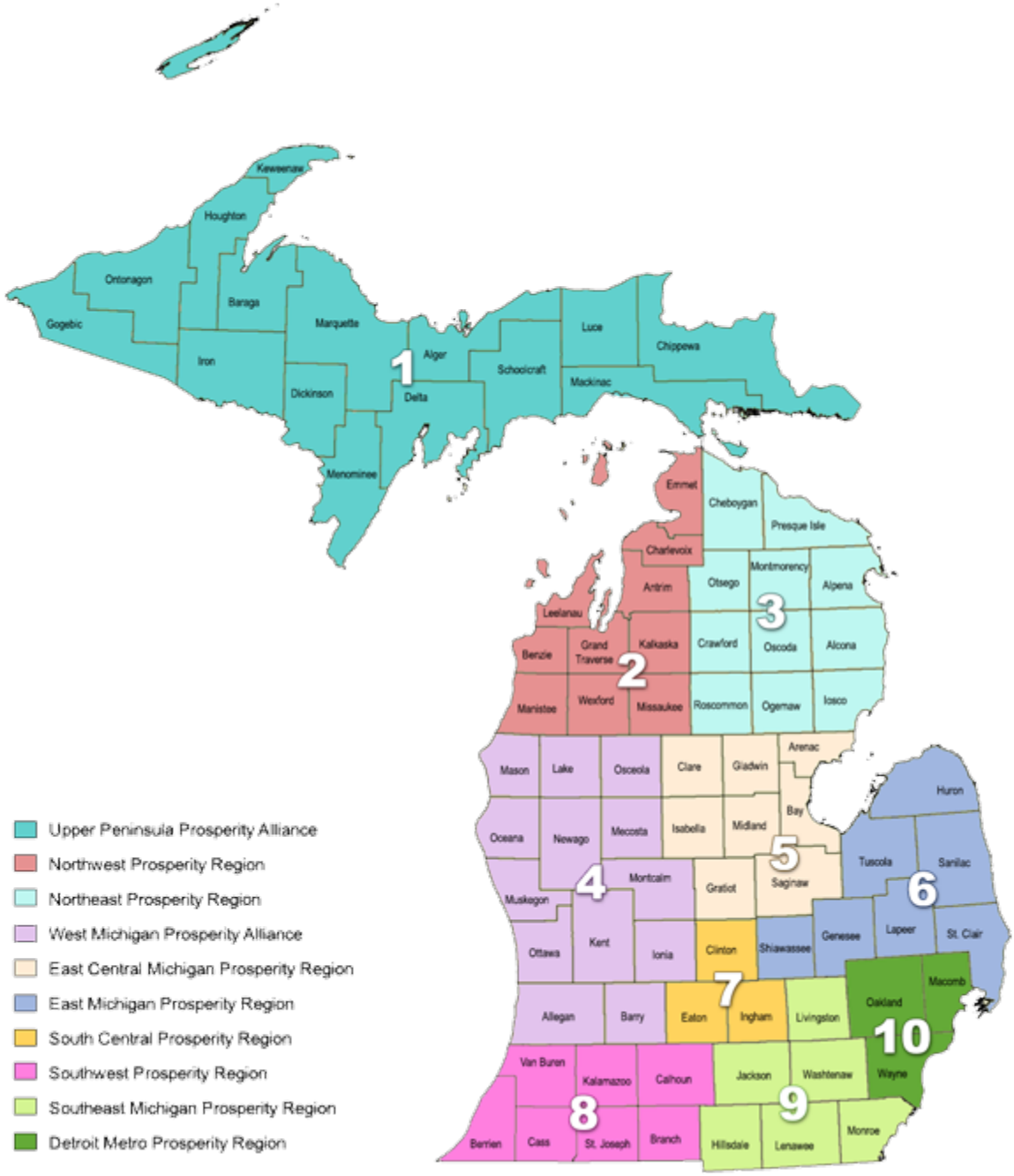
Upper Peninsula participants found it important to connect clinical and public organizations with community members. They also identified the need to provide travel accommodations, as well as safe spaces to discuss substance misuse and mental health matters. Participants expressed the importance of collaboration between prenatal and postnatal providers.

Mid-Michigan Town Hall Meeting | September 25, 2018 | Saginaw, Michigan with satellite meetings in Caro and Bad Axe

More than 70 people came together to provide feedback on the MIHEIP:
33% public health | 29% clinician | 24% community members | 14% other*
*Included nonprofits, Great Start representatives, and a maternal and child health lobbyist

Participants in the Mid-Michigan MIHEIP Town Hall identified the need for trusting relationships between families, community institutions, medical institutions, and government. Also, participants suggested the need to strengthen resources for mothers with addiction and/or mental health needs. Participants discussed the need for education surrounding nutrition, chemical/toxic exposure, vaccinations, breastfeeding, child safety/safe sleep, and child health visits. Social determinants of health were concerns for this region. Participants also shared concerns about lack of birthing hospitals and prenatal providers in the region, causing transportation to be a barrier.

Appendix H: Michigan's Prosperity Regions



Appendix I: Together, Saving Lives: Michigan's Resources

The *Mother Infant Health and Equity Improvement Plan* acknowledges the importance of the many stakeholders working to improve mother, infant, and family outcomes. Families, communities, community organizations and agencies, as well as providers, health plans, and advisory councils, are tremendous resources that must work together to expand capacity. When all resources and stakeholders work together in alignment with the Improvement Plan, improved maternal and infant health outcomes will become a reality.

Michigan's Maternal Infant Strategy Group (MISG)

In 2017, MDHHS created a Maternal Infant Strategy Group (MISG) to provide necessary leadership to align maternal and infant health goals and strategies across private and public stakeholders in all maternal and child health programs. The MISG provided expert guidance throughout the development of the Mother Infant Health and Equity Improvement Plan to facilitate collaboration among stakeholders and provide guidance on operationalizing a health equity lens to address ***social determinants of health*** and reduce the racial disparity in maternal and infant outcomes in Michigan.

A list of MISG members, including titles and organizations, can be found in Appendix B.

Michigan Alliance for Innovation on Maternal Health (MI AIM)

The Alliance for Innovation in Maternal Health (AIM) is a national data-driven maternal safety and quality improvement initiative that relies on the engagement of stakeholders like health departments, perinatal quality improvement collaboratives, hospitals and health associations. The goal is to implement safety bundles in hospitals to improve care and prevent severe maternal morbidity (complications during labor and delivery) and maternal deaths.

Michigan Collaborative for Contraceptive Access (MICCA)

The Michigan Collaborative for Contraceptive Access (MICCA) is a partnership between the Michigan Department of Health and Human Services, Bureau of Family Health Services, the University of Michigan, and the Institute for Health Policy at Michigan State University. The goal of MICCA is to embed the American College of Obstetricians and Gynecologists (ACOG) guidelines into practice, including:

- Improve prenatal contraceptive counseling
- Increase access to immediate postpartum LARC
- Ensure exceptional patient experience of care

Maternal Infant Health and Equity Quality Collaborative (MIHEC)

The purpose of the Maternal Infant Health & Equity Collaborative (MIHEC) is to support and champion the statewide Mother Infant Health & Equity Improvement Plan (MIHEIP). The Collaborative pursues a shared vision between the varied organizations and providers working to improve the health and well-being of Michigan's families, and it exists to assist and promote collaborative health and equity improvement efforts.

Community Partners

The Improvement Plan relies on the support of community partners to align efforts and implement interventions in each region. Local health departments, maternal and infant healthcare providers, nonprofits, grass-roots organizations, universities, faith-based organizations, and other maternal and infant health stakeholders must work together to reduce disparities and save lives.

Community Health Innovation Regions (CHIRs)

Community Health Innovation Regions (CHIRs) also work in alignment with the *Improvement Plan*. A CHIR is a unique model for improving the wellbeing of a region and reducing unnecessary medical costs through collaboration and systems change. CHIRs engage a broad group of stakeholders to identify and address factors that affect residents' health, such as housing, transportation, and food insecurity, as well as access to high-quality medical care. For more information, visit the CHIR page on the MDHHS website.

Community Input

To increase the impact of interventions, the Improvement Plan collects feedback from the community and seeks to increase community awareness and engagement. Mothers, fathers, family members, faith-based leaders, and other community members must all be invested in the health of moms and babies to improve health outcomes. The Improvement Plan works with community-based organizations and programs to connect with Michigan families to teach advocacy and provide support.

Regional Perinatal Quality Collaboratives (RPQC)

In 2015, the Regional Perinatal Quality Collaboratives (RPQCs) were launched in an effort to improve the Perinatal Care Systems in Michigan. Each RPQC is comprised of diverse cross sector partners, including families, and are charged with improving maternal and infant health outcomes through data-driven quality improvement projects based on the unique regional strengths and challenges. Furthermore, the RPQCs, as a backbone organization, work in alignment with the *Improvement Plan*.

There are 9 RPQCs, representing the 10 prosperity regions in Michigan. The map Michigan's prosperity regions can be found in Appendix H.