



STATE OF MICHIGAN

DEPARTMENT OF COMMUNITY HEALTH
LANSING

RICK SNYDER
GOVERNOR

JAMES K. HAVEMAN
DIRECTOR

March 17, 2014

Dear Members of the Michigan Section of the American College of Obstetricians and Gynecologists (ACOG),

The Michigan Department of Community Health (MDCH) is responsible for surveillance of all deaths of Michigan women during pregnancy or within 365 days of the conclusion of pregnancy, regardless of cause. Deaths are identified by linkage of vital records files, by a pregnancy-related cause of death code on the death certificate, the pregnancy check box on the death certificate and voluntary reporting. Although these are rare events, they reflect the overall health status of women and systems of care. Enclosed, please find the *2013 Pregnancy-Associated Mortality in Michigan* factsheet, providing the most recent maternal deaths statistics for the state.

Surveillance of maternal deaths is of particular concern in Michigan because death rates and racial disparities are persistently high through the 2000's. Learning more about the events and conditions leading to each death is important. Each death is reviewed by the multidisciplinary committees of the Michigan Maternal Mortality Surveillance (MMMS). The goal of these reviews is to learn more about the conditions that lead to these deaths, in the hope that information will be used to prevent future deaths.

Gathering information about each woman who died during pregnancy or within 365 days of the conclusion of the pregnancy is critical to the review process. Relevant documents about each case are retrieved, de-identified case summaries are reviewed by the MMMS Medical or Injury Committee, based on the cause of death. Committee reviews identify trends and avoidable factors, and develop recommendations for future prevention. No identifiable facility, physician or patient information is made available in reviews. Confidentiality is protected under Public Act 368 of 1968.

Timely reporting of maternal deaths by health care providers is essential for Michigan to make progress in reducing such deaths. The *Michigan Maternal Death Reporting Form* and instructions for maternal death reporting are included with letter. We ask that you and your colleagues join us in this effort to reduce maternal deaths by assuring timely reporting of maternal deaths.

Additional materials on the maternal mortality surveillance, including findings of the reviews, will be shared periodically and made available at: www.michigan.gov/mchepi. For further information regarding MMMS and reviews, please contact the MMMS Coordinator, Debra Kimball, MSN, RN at (517) 335-8379.

Sincerely,

Sarah Lyon-Callo, MA, MS
Director, Lifecourse Epidemiology and
Genomics Division, Bureau of Disease Control,
Prevention and Epidemiology

Sincerely,

Debra Kimball, MSN, RN
MMMS Coordinator
Division of Family & Community Health

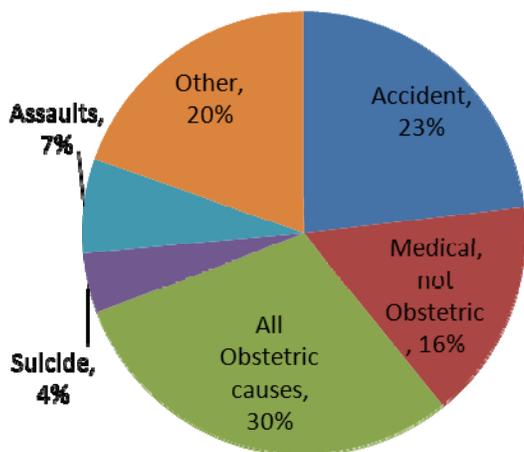
Enclosures (2)

cc: James Gell, MD, FACOG, Chair, MMMS Medical Committee
Robert Sokol, MD, FACOG, Co-Chair, Medical Committee
Mary, Roberts, MD, FAPA, Chair, MMMS Injury Committee
Robert Lorenz, MD, FACOG, Co-Chair, MMMS Injury Committee

Table 1: Mortality per 100,000 live births

Year	N	Pregnancy Associated	Pregnancy -Related	Not Preg.-Related
2005	71	55.7	24.3	31.4
2006	63	49.4	17.2	32.1
2007*	86	68.7	25.6	43.1
2008*	79	65.2	21.4	43.7
2009*	72	61.4	26.4	35.0
2010*	86	75.0	36.6	38.4
Total	459	62.3	25.1	37.2

Figure 1: Most Frequent Cause of Death, 2005-2010



* Provisional results pending vital records verification and MMMS Committee review. Data Source: Maternal Linked File, Division for Vital Records and Health Statistics, MDCH

The death of a woman during pregnancy, during labor/delivery or after delivery is a tragedy for her family, community and society as whole. Pregnancy-associated mortality, sub-divided into pregnancy-related and non-pregnancy related (see box page 2) is a primary indicator of the overall health status of women, the effectiveness of obstetrical care and the health care system. After many decades of declining mortality, pregnancy-associated mortality is increasing across the United States, including in Michigan (Table 1). Although improvements in case ascertainment and surveillance may account for part of this increase, other factors such as increasing prevalence of comorbidities, substance use and loss of providers, may be influencing this rate. Because these are sentinel events, case review is essential to identify policy, system, provider, community and patient factors that may have affected the outcome. The goal of these reviews is to learn more about the conditions that lead to such deaths, identify modifiable risk factors and to share recommendations with policy makers, maternal health stakeholders and health care providers in the hope that the information will be used to prevent future deaths.

Based on ICD-10 coding on the death certificate (and prior to committee review), obstetric-related and accidents were the most prevalent causes of pregnancy-associated mortality (Figure 1).

Comparison between states is problematic because there is considerable variation in the quality and consistency of reporting. Some difference in rates has been associated with underreporting of pregnancy-associated mortality, especially if based solely on identification through the death certificate. Implementation of the revised death certificate, issued in 2003, includes a pregnancy status checkbox for deceased females with the intent to improve the completeness of maternal mortality data, varies by state. Finally, the rate may more appropriately be referred to as a ratio as the rate as stillbirths are excluded and infants in multiple birth sets over represented in live birth numbers.

With these limitations in mind and using the death certificate ICD-10 Codes for cause of death, state comparisons can be made (Table 2). Pregnancy-related mortality is high and disproportionately affects Non-Hispanic African American women.

Table 2: Pregnancy-Related Mortality, by race-ethnicity per 100,000 live births, 1999-2010**

	Overall	NH White	NH African American	Rate Difference	Rate Ratio
Michigan	22.2	16.6	50.8	34.3	3.1
US	15.6	11.5	35.8	24.3	3.1

NH= Non-Hispanic

Pregnancy-Related Mortality in Michigan compared to other states

- Overall 8th highest
- NH White 11th highest
- NH African American 3rd highest (tied with New Jersey)
- Racial Disparity 15th highest

**Centers for Disease Control and Prevention, National Center for Health Statistics. Compressed Mortality File 1999-2010 on CDC WONDER Online Database, released January 2013. Data are compiled from Compressed Mortality File 1999-2010 Series 20 No. 2P, 2013. Accessed at <http://wonder.cdc.gov/cmfi-icd10.html> on Oct 23, 2013 1:59:43 PM
Live Birth Files for 1999-2010 were accessed from the same source

Michigan Maternal Mortality Surveillance (MMMS)

Systematic surveillance of pregnancy-associated mortality began in Michigan in 1950 as collaboration between the Michigan Department of Health (now the 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. It was known as the Michigan Mortality Study until 2004, when the new case ascertainment method and adjustments in the overall process necessitated the name change to Michigan Maternal Mortality Surveillance (MMMS).

Pregnancy-Associated Deaths†

The death of a woman while pregnant or within one year of termination of pregnancy from any cause, divided into Pregnancy-Related and not-Pregnancy Related

Pregnancy-Related†

The death of a woman while pregnant or within one year of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Not Pregnancy-Related†

The death of a woman while pregnant or within one year of termination of pregnancy due to a cause unrelated to pregnancy

† Centers for Disease Control and Prevention (CDC) and American College of Obstetrics and Gynecology (ACOG)

For more information about Michigan Maternal Mortality Surveillance (MMMS) contact Deb Kimball, MSN, RN Maternal Health Nurse Consultant, MMMS Coordinator at 517-335-8379 or kimballd1@michigan.gov

INSTRUCTIONS FOR COMPLETING THE MATERNAL DEATH REPORT

Reportable Case: When it is deemed that death occurred to a pregnant woman or one who has been pregnant within the last 365 days, it is the responsibility of the knowledgeable person to report that death to Maternal Mortality Surveillance (MMMS) at the Michigan Department of Community Health. The MMMS will conduct a confidential investigation. Provide as complete a report as possible. Leave blank any unknown information.

1. **Name and address of woman:** Record the full name and address of the woman.
2. **Date of death:** Record the date of the woman's death as month, day year.
- 2a. **Time of death:** Record the time of the woman's death as hour, minute, a.m. or p.m.
3. **Date of birth:** Record the date of the woman's birth as month, day, year.
4. **Location of death:** If the woman's death did not take place in a hospital, record the location type, or name if a facility, or mode of transportation (such as clinic, ambulance, etc.) and city.
- 5a. **Report prepared by:** Record the name of the person completing the report and the date that the report was prepared.
- 5b. **Name of organization:** Record the name of the organization and telephone number of the person preparing the report.
- 6a. **Woman medical record number:** If this death is being reported by a hospital, please record the woman's medical record number.
- 6b. **Social Security Number:** Record the woman's Social Security number.
7. **Name of attending physician:** Record the name of the physician in attendance at the time of death.
8. **Hospital of death:** Record the name and city of the hospital where the Michigan woman died if it is not the same as number 4, 'Location of Death'.
9. **Autopsy:** Check the most appropriate description of autopsy status.
- 10a. **Medical examiner or hospital pathologist:** Record the name of the medical examiner or hospital pathologist who performed the autopsy.
- 10b. **Name of facility or address where autopsy performed:** Record the name of the facility or address where the autopsy was performed.
11. **Name of additional hospitals where woman was admitted during pregnancy:** Record the names of any other hospitals in which the woman was an inpatient in the last 365 days.
12. **Name of birth hospital if known:** Record the name of the hospital where the woman gave birth.
- 13a. **Live birth:** Record whether the woman delivered a live born infant.
- 13b. **If live birth, date of delivery:** If the woman delivered a live born infant, record the date of delivery.