



DEPARTMENT OF HEALTH

Larry Hogan, Governor · Boyd K. Rutherford, Lt. Governor · Dennis R. Schrader, Secretary

August 2, 2022

The Honorable Delores G. Kelley
Chair, Senate Finance Committee
Miller Senate Office Building, 3 East Wing
11 Bladen St.
Annapolis, MD 21401-1991

The Honorable Joseline A. Peña-Melnyk
Chair, House Health and Government
Operations Committee
House Office Building, Room 241
6 Bladen St.
Annapolis, MD 21401-1991

RE: Report required by Chapter 337 of 2020 (HB 837) – Recommendations related to severe maternal morbidity (MSAR # 12799)

Dear Chair Kelley and Chair Peña-Melnyk:

Pursuant to Chapter 337 of 2020, the Maryland Maternal Mortality Review Program submits this legislative report. It was recently brought to our attention that this report was not submitted as planned in December 2020. Please note that the content in this report is from late 2020.

In accordance with the Chapter, the Maryland Maternal Mortality Review Program (the Program) consulted with the Maternal Mortality Review Committee, local Maternal Mortality Review teams, and the Maryland Maternal Health Innovation Program to study:

- How the reporting of severe maternal morbidity could be added to the responsibilities of the Program;
- Which diagnoses and conditions should be included in the definition of “severe maternal morbidity;”
- How data on severe maternal morbidity would be collected and reported;
- The estimated fiscal impact of adding severe maternal morbidity to the Program’s review and reporting responsibilities; and
- How to prepare and report the findings of the study of these issues.

The following contains the findings of the Program’s study. If you have questions concerning this report, please Megan Peters, Acting Director, Office of Governmental Affairs at (410) 844-2318 or megan.peters@maryland.gov.

Sincerely,

Dennis R. Schrader
Secretary

Cc: Jinlene Chan, MD, MPH, FAAP, Acting Deputy Secretary, Public Health Services
Donna Gugel, MHS, Director, Prevention and Health Promotion Administration
Shelly Choo, MD, MPH, Director, Maternal and Child Health Bureau
Megan Peters, MDH, Acting Director, Office of Governmental Affairs
Sarah T. Albert, MSAR #12799

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Recommendations related to severe maternal morbidity

Pursuant to Chapter 337 of 2020 (HB 837)

December 2020

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List of Acronyms

ACOG	American College of Obstetricians and Gynecologists
CDC	Centers for Disease Control and Prevention
FTE	full time employee
ICU	intensive care unit
JHU	The Johns Hopkins University
MDMOM	State Maternal Health Initiative Program
MMRC	Maternal Mortality Review Committee
SMFM	Society for Maternal-Fetal Medicine
SMM	severe maternal morbidity

Introduction

The Maryland Maternal Mortality Review Program (Program) was established in statute in 2000. Maryland Annotated Code Health – General Article, §13-1203—1207, establishes the Program in the Maryland Department of Health (Department) and describes its scope. The purpose of the Program is to:

- Identify maternal death cases;
- Review medical records and other relevant data;
- Determine preventability of death;
- Develop recommendations for the prevention of maternal deaths; and
- Disseminate findings and recommendations to policymakers, physicians, and other health care providers, health care facilities, and the general public.

The Maternal Mortality Review Committee (MMRC), established by the Program, is a committee of volunteer health care and public health experts and community representatives from across the State. MMRC conducts an in-depth review of all maternal deaths within one year of conclusion of pregnancy to determine pregnancy-relatedness and preventability.

The MMRC works with the Office of the Chief Medical Examiner and the Vital Statistics Administration to identify the maternal death cases and to obtain vital records information for case reviews. Using this information, the Department collaborates with MedChi, the Medical Society of Maryland, to provide administrative support in the maternal mortality review process by obtaining medical records, abstracting cases, and hosting meetings of the MMRC. Based upon the MMRC's reviews of mortality cases, the MMRC then develops recommendations for the prevention of maternal deaths and disseminates their findings and recommendations in an annual legislative report. The Maternal Mortality Review Stakeholder Group, a separate body from the MMRC, is charged with reviewing and adding to the MMRC recommendations included in the previous Maternal Mortality Review report, examining issues resulting in disparities in maternal deaths, and identifying new recommendations with a focus on initiatives to address disparities in maternal deaths. Though allowed by statute, there are currently no active local maternal mortality review committees.

In September 2019, the Health Resources Service Administration awarded The Johns Hopkins University (JHU) \$2,134,389 as part of a nationwide State Maternal Health Initiative Program (MDMOM). The Hopkins-led initiative, MDMOM, is for a 5-year period of performance to assist in addressing disparities in maternal health and improving maternal health outcomes, with a particular emphasis on preventing and reducing maternal mortality and severe maternal morbidity (SMM). JHU has partnered with the Department, Baltimore Healthy Start, and hospital centers to address SMM. As a result of this partnership, an MDMOM leadership committee created a Maryland-specific morbidity database form modeled after the form currently in use by Illinois. Please see the Appendix for the Maryland Severe Maternal Morbidity Review Form.

In July 2020, the hospital-based SMM review and surveillance pilot program launched in six delivering hospitals: Anne Arundel Medical Center, Howard County General Hospital, Johns

Hopkins Hospital, MedStar St. Mary's, Mercy Medical Center, and Sinai Hospital of Baltimore. These six hospitals were selected to represent various practice models and levels of maternity care. Separate training sessions were organized with each hospital to not only review the protocols and forms, but to also abstract a case using the MDMOM SMM database. An evaluation of the pilot will be conducted in early to mid-2021. It is a goal of MDMOM to have 18 of Maryland's 32 delivering hospitals participating in the program by the end of the 5 years.

Currently, Illinois has the only statewide maternal morbidity review program. There are approximately 120 delivering hospitals in Illinois, organized into ten regional perinatal networks. Maternal morbidity and mortality case reviews are conducted by each perinatal center, and approximately 10 percent of morbidity cases are reviewed at the State level.¹ In the current Maryland SMM pilot, case abstraction and database entry are completed at the individual hospital by trained nursing staff and the data review and analysis are performed by members of the MDMOM team.

There would be a fiscal impact of adding SMM to the Program. It would require additional resources that MDH currently does not support in its budget, including personnel to develop and maintain the extra capacity of the SMM database, implement programmatic changes to further tailor the database to the needs of the State, and provide epidemiology support to conduct thorough data analyses. A subcommittee of the MMRC focused on SMM review would also be required. Similar to the Illinois SMM program, this subcommittee could perform a secondary review of 10 to 15 percent of the State morbidity cases, while analyzing trends and outcomes by race and ethnicity, co-morbid risk factors, age and parity, as well as hospital location and perinatal level of care. The MMR Program would need to expand its administrative capabilities to support both the MMRC and SMM.

Definition of Severe Maternal Morbidity – Diagnoses and Conditions

In Maryland and across the country, there are increasing rates of SMM as well as increasing frequency of risk factors for SMM. Changes in the overall health of the population of women giving birth may contribute to increases in complications. There have been documented increases in maternal age, pre-pregnancy obesity, preexisting chronic medical conditions, and cesarean delivery.² The impact of these increases on maternal morbidity can affect the short and long-term health outcomes for pregnant and parenting women, but also have a systemic impact with increased medical costs and longer hospitalization stays.³ To reduce SMM, it is essential to identify what constitutes severe morbidity, follow and understand patterns of SMM, and develop and carry out interventions to improve the quality of maternal care.

1S. Gellar, personal communications, September 15, 2020

2Centers for Disease Control and Prevention. How does CDC Identify Severe Maternal Morbidity? 26 December, 2019.

<https://www.cdc.gov/reproductivehealth/maternalinfanthealth/smm/severe-morbidity-ICD.htm>

3Callaghan WM, Creanga AA, Kuklina EV. [Severe maternal morbidity among delivery and postpartum hospitalizations in the United States](#). *external icon* *Obstet Gynecol.* 2012;120(5):1029–1036.

In the Obstetric Care Consensus No. 5, the American College of Obstetrics and Gynecology (ACOG) and the Society for Maternal-Fetal Medicine (SMFM) in conjunction with CDC, share the opinion that while there is no consensus definition of SMM, SMM includes unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health.⁴ To identify SMM at a population-level, CDC uses a list of 21 indicators to track morbidity by administrative hospital discharge data and International Classification of Diseases (ICD) diagnosis and procedure codes.⁵ These indicators include diagnoses such as cardiac arrest or failure, acute renal failure, eclampsia, amniotic fluid or thrombotic emboli, and blood product transfusions.

To identify and review SMM on a smaller, hospital-based level that focuses on quality improvement, MDMOM uses validated and accepted criteria of admission to the intensive care unit (ICU) and transfusion of 4 or more units of blood products.⁶ These criteria can be evaluated in real time, so hospitals, and potentially state-based review processes, can identify and review cases and analyze their findings to develop systems improvement. Both ACOG and SMFM support these criteria for facility level surveillance and review. Of Maryland's 32 delivering hospitals, 17 are Level I or Level II and have fewer deliveries, maternal deaths, and morbidity cases than larger, tertiary centers.⁷ Because of those differences, the MDMOM pilot is allowing MedStar St. Mary's Hospital, a Level I delivering hospital, to identify, abstract, and review cases using a modified definition of ICU admission and transfusion of 1 unit of blood products. The MDMOM pilot plans to review the cases from St. Mary's Hospital and evaluate the use of this definition and efficacy for surveillance at smaller hospitals.

Collection and Reporting of Severe Maternal Morbidity Data

The current MDMOM initiative for hospital based SMM surveillance and review is in a pilot phase. MDMOM created a protocol and data abstraction forms using the current Illinois SMM forms and processes as a foundation. For purposes of the pilot, MDMOM adopted and modified the SMM facility surveillance guidance provided by ACOG through the Alliance for Innovation on Maternal Health program and in consultation with State experts and members of the Maryland Maternal Health Task Force. Experienced nurses at pilot hospitals were trained as data abstractors and utilize a password protected SMM database for input of hospital morbidity data. The SMM database has a web-based data entry platform designed to ensure high-quality data entry. The study population are pregnant women or women within 42 days after the end of pregnancy, who are admitted to one of the pilot hospitals and experience an SMM event.

4American College of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine, Kilpatrick SK, Ecker JL. [Severe maternal morbidity: screening and review external icon](#). Am J Obstet Gynecol 2016;215(3):B17-B22.

5Centers for Disease Control and Prevention. How does CDC Identify Severe Maternal Morbidity?

<https://www.cdc.gov/reproductivehealth/maternalinfanthealth/smm/severe-morbidity-ICD.htm>

6Callaghan WM, Grobman WA, Kilpatrick SJ, Main EK, D;Alton M. Facility-Based Identification of Women with Severe Maternal Morbidity 2014;123(5):978-981. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4293012/>

7Maryland Perinatal Clinical Advisory Committee. The Maryland Perinatal Systems Standards. Revised April 2019. Accessed 23 December, 2020.

https://phpa.health.maryland.gov/mch/Documents/perinatal_newsletters/Maryland%20Perinatal%20System%20Standards_Revised%20April%202019_FINAL.pdf

The participating hospitals will establish SMM review committees consisting of clinical and operational staff from the facility. Hospitals will identify cases through monthly review of their electronic health records system. The trained clinical abstractor will review all available maternal and newborn medical charts for each SMM case and complete the SMM review form within a month of the event. The review forms will be de-identified, and each form will have a unique SMM surveillance identification number.

At meetings, hospital based SMM review committees will discuss each case presented by the abstractor and work to identify provider, hospital, or systemic contributors to the SMM cases. Hospitals will generate quarterly reports on de-identified and pooled data. The MDMOM Program will analyze the data and reports from the individual hospitals. MDMOM will produce annual reports, and present findings at State-level SMM surveillance meetings. MDMOM will also revise forms and processes as needed before expanding the pilot and inviting other hospitals to participate during the implementation phase. MDMOM will evaluate the pilot using CDC methodology in 2021, and the results will help inform the Statewide scale-up of the initiative through 2024.⁸ MDMOM will conduct an evaluation of the quantitative impact measures in spring of 2024. The quantitative evaluation will look at SMM rates and surveillance and review data from the State overall, as well as key comorbidities, race, ethnicity, and nativity, to examine absolute and relative changes in SMM throughout the initiative. In partnership with the expert advice and assistance from MDMOM, this evaluation and earlier analyses will help inform the development of a Department-led SMM initiative within the Program.

Fiscal Impact

There would be a fiscal impact of adding SMM to the Program's priorities. It would require additional resources that MDH currently does not support in its budget. The estimated resource needs are:

- Staff required for ongoing maintenance and programmatic changes for the Statewide database, as well as epidemiology support for State level data analysis;
- Additional administrative staff to act as liaisons to member hospitals, coordinate data entry and quarterly analysis by member hospitals, and coordinate State review meetings; and
- Financial incentives for hospitals⁹, to offset costs to abstract cases, enter data, and conduct monthly SMM meetings.

These anticipated personnel costs are based on current MDMOM staffing levels, as well as MDMOM's recommendations for future support of the SMM program. Currently MDMOM has

⁸Centers for Disease Control and Prevention. Updated Guidelines for Evaluating Public Health Surveillance Systems. 22 August, 2001. <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm>

⁹ The financial incentives offered by MDMOM are approximately \$1,000 per hospital per year. In addition, a small financial incentive is given for each case entered the database, at \$50 per case. Currently, it takes approximately 2 to 3 hours to enter each case into the database.

a consultant, two programmers, and two interns dedicated to maintaining the website, SMM database, and the data dashboard and learning module design. Including minimal staffing recommendations from MDMOM, current incentives paid to hospitals, and database hosting expenses, the minimum estimated costs would be approximately \$365,000 yearly. MDH does not currently have the funds in its budget to support these resource needs.

Estimated Annual Costs

Item	Amount
Supplies and printing costs	\$1,200
Epidemiology analysis - 0.3 FTE	\$25,928
Hospital review costs including monthly meetings, interdisciplinary meetings, and database records costs	\$40,000
Administrative support for overall SMM Coordination - 1.5 full time employee (FTE), including benefits	\$119,700
Database maintenance and support - 2.0 FTE and database hosting costs	\$177,594
Total	\$364,422

Conclusion

SMM is a growing concern in maternal health. Per CDC national data, the overall rate of SMM increased almost 200% between 1993 to 2014, from 49.5 to 144 out of 10,000 delivery hospitalizations. This increase has been mostly driven by blood transfusions, which increased from 24.5 in 1993 to 122.3 in 2014. After excluding blood transfusions, the rate of SMM increased by about 20% over time, from 28.6 in 1993 to 35.0 in 2014.¹⁰ Surveillance on hospital-level SMM cases is followed by tracking ICU admission and transfusion of 4 or more units of blood products. The MDMOM program, with participation from the Department, is part of a 5-

¹⁰Centers for Disease Control and Prevention. *Severe Maternal Morbidity in the United States*. 31 January 2020.

<https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html>

year grant project to address disparities in maternal health and improve maternal health outcomes, with a particular emphasis on preventing and reducing maternal mortality and severe maternal morbidity. MDMOM has initiated a pilot SMM surveillance and reporting program in six Maryland delivering hospitals. Those hospitals perform case abstraction and database entry into a secure database, with monthly reviews and analysis of the de-identified data. Over the remaining three and a half years, the goal of MDMOM is to grow and refine the database and to have the remaining delivering hospitals join this SMM surveillance effort. Through close surveillance and active quality improvement processes, Maryland will strive to decrease its SMM rate, positively impacting maternal mortality as well as the long-term health of mothers and their families.

Appendix: Severe Maternal Morbidity Review Form Maryland



SMM TYPE			
ICU/CCU Admit? <input type="checkbox"/> No <input type="checkbox"/> Yes		Timing of Maternal Morbidity:	
≥4 Units Packed Red Blood Cells Transfused? <input type="checkbox"/> No <input type="checkbox"/> Yes		<input type="checkbox"/> Antepartum (specify Gestational Age) GA ___ weeks / ___ days	
COVID-19 Hospital Admit? <input type="checkbox"/> No <input type="checkbox"/> Yes		<input type="checkbox"/> Intrapartum	
Patient Died in the Hospital? <input type="checkbox"/> No <input type="checkbox"/> Yes		<input type="checkbox"/> Postpartum (within 8 hours)	
		<input type="checkbox"/> Postpartum (8 to 72 hours)	
		<input type="checkbox"/> Postpartum (after 72 hours)	
SMM Event Date: (mm/dd/yyyy)	Hospital Level: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4	Hospital Name: _____	SMM Case Number: (Year – Quarter – Hospital ID – Sequence #) _____-_____-_____-_____

ABSTRACTION

PATIENT CHARACTERISTICS

Abstractor Job Title: _____		Admission Date: (mm/yyyy) _____		Discharge Date: (mm/yyyy) _____		Length of Stay _____ days	
Abstraction Date: (mm/dd/yyyy) _____		Date of Birth: (mm/yyyy) _____		Age at Admission: _____		Gestational Age at Admission: GA ___ weeks / ___ days	
Weight/Height: (pre-pregnancy/1 st trimester) ____ lbs. / ____ inches <input type="checkbox"/> Unknown wt. <input type="checkbox"/> Unknown ht.		BMI: (pre-pregnancy/1 st trimester) ____ Kg/m ² <input type="checkbox"/> Unknown		Weight at Admission: ____ lbs. <input type="checkbox"/> Unknown			
Marital Status: <input type="checkbox"/> Single (never married) <input type="checkbox"/> Married <input type="checkbox"/> Living with partner / common-law <input type="checkbox"/> Legally separated <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Unknown		Highest Education Completed: <input type="checkbox"/> 12 th grade or less, no diploma <input type="checkbox"/> High school grad or GED completed <input type="checkbox"/> Some college credit but no degree <input type="checkbox"/> Associate or Bachelor degree <input type="checkbox"/> Master's degree <input type="checkbox"/> Doctorate or professional degree <input type="checkbox"/> Unknown		Paid Employment? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown <i>If Yes, primary occupation:</i> _____ <i>If No, partner's primary occupation:</i> _____ <input type="checkbox"/> No partner			
Race: (select all that apply) <input type="checkbox"/> Black/African American <input type="checkbox"/> White <input type="checkbox"/> Asian <input type="checkbox"/> Native American/Alaskan Native <input type="checkbox"/> Pacific Islander <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown		Hispanic/Latina: <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown		Primary Payer Source: <input type="checkbox"/> Medicaid <input type="checkbox"/> Medicaid / Medicare <input type="checkbox"/> Military <input type="checkbox"/> Private Insurance <input type="checkbox"/> Self-Pay <input type="checkbox"/> None <input type="checkbox"/> Unknown			
		Born in the United States: <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown <i>If No, country of birth:</i> _____					

OBSTETRICAL HISTORY

Gravida _____	Para _____	Term _____	Preterm _____	Abortions: Induced _____ Spontaneous _____	Living _____
# Early Fetal Deaths: _____		# Late Fetal Deaths: _____		# Previous Infant Deaths: _____	
Complications in Previous Pregnancies? <input type="checkbox"/> Not applicable (no prior pregnancies) <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown <i>If Yes, specify:</i> _____					

PREVIOUS MEDICAL HISTORY

Pre-existing Medical Conditions? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown <i>If Yes, specify:</i> _____
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SEVERE MATERNAL MORBIDITY REVIEW FORM MARYLAND V2 08/17/2020



PRENATAL CARE (PNC)			
<input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown If Yes, specify: Trimester of First PNC: <input type="checkbox"/> First <input type="checkbox"/> Second <input type="checkbox"/> Third <input type="checkbox"/> Unknown Total Number of PNC Visits: _____ <input type="checkbox"/> Number of PNC visits unknown			
PNC Provider Type: (select all that apply) <input type="checkbox"/> Not applicable (no PNC) <input type="checkbox"/> General Obstetrician <input type="checkbox"/> Maternal Fetal Medicine <input type="checkbox"/> Family Medicine <input type="checkbox"/> Nurse Practitioner <input type="checkbox"/> Certified Nurse Midwife / Other Licensed Midwife <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown		PNC Source/Location: (select all that apply) <input type="checkbox"/> Not applicable (no PNC) <input type="checkbox"/> Health Department <input type="checkbox"/> Home-Based Practice <input type="checkbox"/> Hospital <input type="checkbox"/> Clinic <input type="checkbox"/> Private Office <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown	
Planned Pregnancy? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown Estimated Date of Delivery: (mm/dd/yyyy) Estimate based on: <input type="checkbox"/> Ultrasound <input type="checkbox"/> IVF <input type="checkbox"/> LMP		Assisted Reproductive Technology? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown If Yes, specify: <input type="checkbox"/> IVF/ICSI <input type="checkbox"/> Ovarian stimulation/IUI <input type="checkbox"/> Other: _____	
Index pregnancy/birth problems or conditions? <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> Unknown If Yes, specify:	
Mental Health Disorder? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown If Yes, specify: (select all that apply) <input type="checkbox"/> Anxiety <input type="checkbox"/> Depression: <input type="checkbox"/> Postpartum Depression <input type="checkbox"/> Eating disorder <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown		Substance Use? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown If Yes, specify substance(s): <input type="checkbox"/> Alcohol <input type="checkbox"/> Tobacco <input type="checkbox"/> Marijuana <input type="checkbox"/> Cocaine <input type="checkbox"/> Opioids <input type="checkbox"/> Methamphetamines <input type="checkbox"/> Prescription Drugs (specify) <input type="checkbox"/> Opioid Agonist Therapy <input type="checkbox"/> Other Drugs (specify) If Opioid Agonist Therapy, specify: (select all that apply) <input type="checkbox"/> Methadone <input type="checkbox"/> Suboxone / Bupropion <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown	
Pre-SMM Event Hospitalizations and/or ER Visits? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown If Yes, specify total number of hospitalizations or ER visits: _____ and details for the most recent visit: Admission Date: (mm/yyyy) Discharge Date: (mm/yyyy) Length of Stay: (days) Gestational Age: (weeks/days) Hospital Name: (specify) Reason(s): (specify)		Specialist Physician Referral and/or Consult? <input type="checkbox"/> No <input type="checkbox"/> Yes, patient was referred but DID NOT consult a specialist physician <input type="checkbox"/> Yes, patient consulted a specialist physician <input type="checkbox"/> Unknown If Yes, specify: Provider type: (select all that apply) <input type="checkbox"/> Maternal Fetal Medicine <input type="checkbox"/> Obstetric Anesthesia <input type="checkbox"/> Other: _____ Reason(s): (specify)	
PREGNANCY STATUS AT TIME OF SMM EVENT			
<input type="checkbox"/> Singleton <input type="checkbox"/> Twin <input type="checkbox"/> Triplets <input type="checkbox"/> Multiple (4+) If 3+, fill out additional delivery information per newborn/fetus in the Narrative.			
Newborn/Fetus A - Pregnancy Status at Time of Morbidity: (select one)			
<input type="checkbox"/> Delivered Date of Delivery: (mm/dd/yyyy) _____ Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Undifferentiated Birthweight: (grams) _____		<input type="checkbox"/> Other Outcome <input type="checkbox"/> Ectopic <input type="checkbox"/> Molar pregnancy	
		<input type="checkbox"/> Not Delivered	<input type="checkbox"/> Unknown



SEVERE MATERNAL MORBIDITY REVIEW FORM MARYLAND V2 08/17/2020



Apgar @ 1 min _____ @ 5 min _____ @ 10 min _____ Gestational Age: (weeks/days) _____ Fetal/Newborn Status: <input type="checkbox"/> Live Birth <input type="checkbox"/> Fetal Death <i>If Fetal Death, specify:</i> GA at fetal death (weeks/days) _____ <input type="checkbox"/> Neonatal Death <i>If Neonatal Death, specify:</i> Date of death (mm/dd/yyyy) _____ NICU admit? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown Hospital Level: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> Outside of hospital: _____ <input type="checkbox"/> Other facility: _____ <input type="checkbox"/> Unknown		<input type="checkbox"/> Abortion: <input type="checkbox"/> Spontaneous <input type="checkbox"/> Induced Date: (mm/dd/yyyy) _____ Gestational Age: (weeks/days) _____ Hospital Level: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> Outside of hospital: _____ <input type="checkbox"/> Other facility: _____ <input type="checkbox"/> Unknown			
Newborn/Fetus B - Pregnancy Status at Time of Morbidity: (select one) <input type="checkbox"/> Not applicable (singleton birth)					
<input type="checkbox"/> Delivered Date of Delivery: (mm/dd/yyyy) _____ Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Undifferentiated Birthweight: (grams) _____ Apgar @ 1 min _____ @ 5 min _____ @ 10 min _____ Gestational Age: (weeks/days) _____ Fetal/Newborn Status: <input type="checkbox"/> Live Birth <input type="checkbox"/> Fetal Death <i>If Fetal Death, specify:</i> GA at fetal death (weeks/days) _____ <input type="checkbox"/> Neonatal Death <i>If Neonatal Death, specify:</i> Date of death (mm/dd/yyyy) _____ NICU admit? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown Hospital Level: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> Outside of hospital: _____ <input type="checkbox"/> Other facility: _____ <input type="checkbox"/> Unknown		<input type="checkbox"/> Other Outcome <input type="checkbox"/> Ectopic <input type="checkbox"/> Molar pregnancy <input type="checkbox"/> Abortion: <input type="checkbox"/> Spontaneous <input type="checkbox"/> Induced Date: (mm/dd/yyyy) _____ Gestational Age: (weeks/days) _____ Hospital Level: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> Outside of hospital: _____ <input type="checkbox"/> Other facility: _____ <input type="checkbox"/> Unknown		<input type="checkbox"/> Not Delivered	<input type="checkbox"/> Unknown
DELIVERY INFORMATION (Complete below ONLY if Pregnancy Status was "Delivered") <input type="checkbox"/> Not applicable					
Labor: <input type="checkbox"/> No labor <input type="checkbox"/> Spontaneous <input type="checkbox"/> Augmented <input type="checkbox"/> Induced <input type="checkbox"/> Trial of Labor After Cesarean <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown		Type of Anesthesia (Labor): <input type="checkbox"/> None <input type="checkbox"/> Local <input type="checkbox"/> Epidural <input type="checkbox"/> Spinal <input type="checkbox"/> Combined Spinal-Epidural <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown		Type of Anesthesia (Surgery): <input type="checkbox"/> None <input type="checkbox"/> Epidural <input type="checkbox"/> Spinal <input type="checkbox"/> Combined Spinal-Epidural <input type="checkbox"/> General <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown	
Mode of Delivery: <input type="checkbox"/> Spontaneous vaginal delivery <input type="checkbox"/> Assisted vaginal delivery: <input type="checkbox"/> Vacuum <input type="checkbox"/> Forceps <input type="checkbox"/> VBAC <input type="checkbox"/> Cesarean <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown		Complete ONLY if Mode of Delivery was Cesarean: Type of Cesarean Section: <input type="checkbox"/> Scheduled <input type="checkbox"/> Emergency: (specify details below) <input type="checkbox"/> Under local anesthesia <input type="checkbox"/> Under general anesthesia Last known cervical dilation: (cm) _____ <input type="checkbox"/> Unknown			
		Primary Indication for Cesarean: <input type="checkbox"/> Repeat <input type="checkbox"/> Dystocia / Failure to Progress <input type="checkbox"/> Malposition <input type="checkbox"/> Placenta previa <input type="checkbox"/> Placenta accreta/increta/percreta <input type="checkbox"/> Other fetal indication: _____ <input type="checkbox"/> Other maternal condition: _____ <input type="checkbox"/> Unknown			



SEVERE MATERNAL MORBIDITY REVIEW FORM MARYLAND V2 08/17/2020



Primary Maternity Care Provider during Labor: <input type="checkbox"/> General Obstetrician <input type="checkbox"/> Maternal Fetal Medicine Specialist <input type="checkbox"/> Family Medicine Physician <input type="checkbox"/> Nurse Practitioner <input type="checkbox"/> Certified Nurse/Licensed Midwife <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown	Primary Maternity Care Provider at Delivery: <input type="checkbox"/> General Obstetrician <input type="checkbox"/> Maternal Fetal Medicine Specialist <input type="checkbox"/> Family Medicine Physician <input type="checkbox"/> Nurse Practitioner <input type="checkbox"/> Certified Nurse/Licensed Midwife <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown	Maternal Transport for Delivery: <input type="checkbox"/> No: <input type="checkbox"/> Not Warranted <input type="checkbox"/> Warranted, no time <input type="checkbox"/> Warranted, kept patient <input type="checkbox"/> Yes: (specify details below) Transfer From: Hospital Level: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 Hospital Name: _____ Transfer To: Hospital Level: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 Hospital Name: _____ <input type="checkbox"/> Unknown
Abnormal Blood Loss during Delivery? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown <i>If Yes, complete below details:</i>		
Total Quantified mL of Blood Loss (QBL) <input type="checkbox"/> Measured (mL) _____ <input type="checkbox"/> Estimated (mL) _____ <input type="checkbox"/> Unknown	Was massive transfusion protocol called? <input type="checkbox"/> No, NOT needed <input type="checkbox"/> No, needed, but NOT called <input type="checkbox"/> Yes <input type="checkbox"/> Unknown	
Blood transfusion during delivery hospitalization? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown If Yes, specify: Total Blood Products Transfused: (mL) _____ Type of Blood Products Transfused: (select all that apply) <input type="checkbox"/> Packed RBC <input type="checkbox"/> Platelets <input type="checkbox"/> Fresh frozen plasma (FFP) <input type="checkbox"/> Whole blood <input type="checkbox"/> Cryoprecipitate	Other Interventions: <input type="checkbox"/> None <input type="checkbox"/> Medication(s): <input type="checkbox"/> Uterotonic: _____ <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown	
ICU/CCU ADMISSION? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown <i>If Yes, complete below details:</i>		
Admission Date: (mm/yyyy) _____ Discharge Date: (mm/yyyy) _____ Length of Stay: (days) _____ Reason(s): (specify) Interventions: (specify)	Maternal Transport for ICU Care: <input type="checkbox"/> No: <input type="checkbox"/> Not warranted <input type="checkbox"/> Warranted, no time <input type="checkbox"/> Warranted, kept patient <input type="checkbox"/> Unknown if warranted <input type="checkbox"/> Yes: (specify details below) Transfer From: Hospital Level: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 Hospital Name: _____	
OTHER SURGERY Did the patient have any type of surgery during the index delivery hospitalization or postpartum? <input type="checkbox"/> No <input type="checkbox"/> Yes, elective <input type="checkbox"/> Yes, emergency <input type="checkbox"/> Unknown <i>If Yes, specify:</i> Type of surgery: (specify) Reason(s): (specify)	FOLLOW-UP GUIDANCE FOLLOWING SMM EVENT Did patient receive family planning counseling? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown Did patient receive referral for specialty consult(s)? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Unknown <i>If Yes, specify:</i> Provider type: (select all that apply) <input type="checkbox"/> Specialist Physician: _____ <input type="checkbox"/> Other: _____ Reason(s): (specify)	



ABSTRACTION: CASE NARRATIVE AND TIMELINE

Include a narrative synopsis focused on the specific SMM that occurred. It should be concise and pertinent to the particular SMM and include appropriate timeline in chronologic format and identifying key moments that impacted care. Use the Case Narrative and Timeline Template to guide your narrative and ensure that you are capturing critical information.

CASE REVIEW ASSESSMENT (DO NOT COMPLETE PRIOR TO REVIEW)

SMM Case Number: (Year – Quarter – Hospital ID – Sequence #) _____ - _____ - _____ - _____	Review Date: (mm/dd/yyyy) _____ / _____ / _____	SMM Event Date: (mm/dd/yyyy) _____ / _____ / _____
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Primary Cause of Morbidity: (select ONLY one)

<input type="checkbox"/> Anesthesia complications <input type="checkbox"/> Cancer <input type="checkbox"/> Cardiomyopathy <ul style="list-style-type: none"> <input type="checkbox"/> Hypertrophic cardiomyopathy <input type="checkbox"/> Postpartum/peripartum cardiomyopathy <input type="checkbox"/> Other <input type="checkbox"/> Cardiovascular conditions <ul style="list-style-type: none"> <input type="checkbox"/> Conduction defects/arrhythmias <input type="checkbox"/> Coronary artery disease <input type="checkbox"/> Pulmonary hypertension <input type="checkbox"/> Hypertensive cardiovascular disease <input type="checkbox"/> Valvular heart disease <input type="checkbox"/> Vascular aneurysm/dissection (non-cerebral) <input type="checkbox"/> Vascular malformations <input type="checkbox"/> Other <input type="checkbox"/> Collagen vascular/autoimmune disorders <ul style="list-style-type: none"> <input type="checkbox"/> Systemic lupus erythematosus <input type="checkbox"/> Other <input type="checkbox"/> Embolism <ul style="list-style-type: none"> <input type="checkbox"/> Amniotic fluid embolism <input type="checkbox"/> Thrombotic <input type="checkbox"/> Other <input type="checkbox"/> Gastrointestinal disorders <input type="checkbox"/> Hematologic <ul style="list-style-type: none"> <input type="checkbox"/> Sickle cell anemia <input type="checkbox"/> Other <input type="checkbox"/> Hypertensive Disorders of Pregnancy <ul style="list-style-type: none"> <input type="checkbox"/> Preeclampsia <input type="checkbox"/> Eclampsia <input type="checkbox"/> HELLP Syndrome <input type="checkbox"/> Chronic hypertension with superimposed preeclampsia 	<input type="checkbox"/> Infection <ul style="list-style-type: none"> <input type="checkbox"/> Antepartum infection <input type="checkbox"/> Postpartum genital tract <input type="checkbox"/> Non-pelvic infection <input type="checkbox"/> Sepsis/septic shock <input type="checkbox"/> Other <input type="checkbox"/> Injury <ul style="list-style-type: none"> <input type="checkbox"/> Drug use <input type="checkbox"/> Motor vehicle accident <input type="checkbox"/> Other <input type="checkbox"/> Metabolic/endocrine Conditions <input type="checkbox"/> Neurologic Conditions <ul style="list-style-type: none"> <input type="checkbox"/> Epilepsy/seizure disorder <input type="checkbox"/> Other <input type="checkbox"/> Obstetric Hemorrhage <ul style="list-style-type: none"> <input type="checkbox"/> Rupture/laceration/intra-abdominal bleeding <input type="checkbox"/> Ruptured ectopic pregnancy <input type="checkbox"/> Placental abruption <input type="checkbox"/> Placenta previa <input type="checkbox"/> Placenta accreta/increta/percreta <input type="checkbox"/> Uterine atony/postpartum hemorrhage <input type="checkbox"/> Other <input type="checkbox"/> Mental Health Conditions <ul style="list-style-type: none"> <input type="checkbox"/> Postpartum depression <input type="checkbox"/> Other <input type="checkbox"/> Pulmonary Conditions <ul style="list-style-type: none"> <input type="checkbox"/> Asthma <input type="checkbox"/> Chronic lung disease <input type="checkbox"/> Other <input type="checkbox"/> Renal Disease <ul style="list-style-type: none"> <input type="checkbox"/> Other (specify) <input type="checkbox"/> Unknown
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Other Associated or Contributing Morbidities: (record ALL that apply from the above list)

FINAL REVIEW COMMITTEE ANALYSIS

Opportunity to alter the SMM outcome? Yes No **—————> If Yes, complete below details:**

Types of factors that offer opportunity to alter the outcome: (Review Module 5 of the SMM Data Abstraction Guide and select all that apply)

Antepartum	Intrapartum	Postpartum
<input type="checkbox"/> Provider _____	<input type="checkbox"/> Provider _____	<input type="checkbox"/> Provider _____
<input type="checkbox"/> System _____	<input type="checkbox"/> System _____	<input type="checkbox"/> System _____
<input type="checkbox"/> Patient _____	<input type="checkbox"/> Patient _____	<input type="checkbox"/> Patient _____

List up to 3 things that could be done to alter the outcome:

Identify practices that were done well and should be reinforced:

Overall recommendations for care improvements as related to this SMM case review: