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Partnering of Public, Academic, and Private Entities to Reestablish Maternal Mortality Review in Georgia

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Abstract

The pregnancy-related mortality ratio in the United States has increased over the past 25 years. Georgia's pregnancy-related mortality ratio is among the highest in the United States. Confronted with this harsh reality, Georgia reestablished maternal mortality review as one strategy to address its high maternal mortality. To achieve a comprehensive process for review of maternal deaths involved securing the knowledge, resources, and support of physician experts, public health agencies and professional organizations as well as representatives in the state legislature. The six key steps in successfully reinstating maternal mortality review were 1) establishing a maternal mortality advisory committee, 2) developing a defined methodology for comprehensive case identification, 3) convening an introductory maternal mortality review committee meeting, 4) securing legislative protection for the committee, 5) conducting a mock mortality review, and 6) completing a formal first-year case review and producing a summary report of initial findings. This first case review revealed the leading causes of pregnancy-related deaths in Georgia as hemorrhage, hypertension, cardiac disease, embolism, and seizures. Our objective in this commentary is to share our experiences and advocate for engaging public, private, and academic partners in working on complex and multifactorial public health issues such as high maternal mortality.

Recent data from the Pregnancy Mortality Surveillance System,¹ a system developed collaboratively by the Centers for Disease Control and Prevention (CDC), the American College of Obstetricians and Gynecologists, and state health departments, confirms that the pregnancy-related mortality ratio in the United States has increased from 12.0 per 100,000 live births in 2000 to 16.7 in 2010.^{2,3} The death of a woman while pregnant or within 1 year of a pregnancy reflects in part the adequacy of and access to health care for women of

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reproductive age. Although formal maternal mortality review has been promoted as a viable strategy to reduce maternal deaths, only approximately half of states in the United States currently conduct such reviews.⁴ Major impediments to statewide maternal mortality review include lack of funding and resources to conduct reviews, absence of statutory regulations for peer review protection of committee members, and lack of collaboration between stakeholders functioning at the intersection of public health policy and delivery of women's and reproductive health care.⁵

Based on data from 2000 to 2006, Georgia's reported pregnancy-related mortality ratio was 20.2 maternal deaths per 100,000 live births, a figure that exceeded the 2010 U.S. pregnancy-related mortality ratio of 16.7 per 100,000 and exceeded the Healthy People 2010 goal of 4.3 per 100,000 by fivefold.⁶ Faced with the harsh reality that Georgia was among the states with the worst maternal mortality ratio, a working group with representatives from the Georgia Obstetrical and Gynecological Society, Georgia Department of Public Health, and the CDC met to formulate a strategic plan to address the state's high maternal mortality. The Georgia Obstetrical and Gynecological Society assumed the key role in assembling the working group. The consensus of the working group was that after a decade of no review as a result of lack of commitment by key stakeholders, reestablishing maternal mortality review in Georgia was a public health priority.

This article reviews six key steps implemented to successfully reestablish maternal mortality review in Georgia 1) establishing a maternal mortality advisory committee, 2) developing a defined methodology for comprehensive case identification, 3) convening an introductory maternal mortality review committee meeting, 4) securing legislative protection for the committee, 5) conducting a mock mortality review, and 6) conducting formal review with a summary report of the first year of reestablished maternal mortality review. The major objective in sharing our process is so that others may learn from our experience and that this information may assist groups contemplating establishing, reestablishing, or refining formal statewide maternal mortality review.

STEP 1: ESTABLISHING A MATERNAL MORTALITY ADVISORY COMMITTEE

The committee was multidisciplinary and included representatives from Emory University Department of Gynecology and Obstetrics, the Georgia Obstetrical and Gynecological Society, Georgia Department of Public Health, and the CDC. The expertise of the approximately 25 advisory committee members included maternal–fetal medicine specialists, nurse-midwives, maternal child health administrators, and epidemiologists.

The committee's major achievements included securing a commitment from the Georgia Department of Public Health to fund the review, creating a formal job description and contract specifying the duties of a mortality review coordinator, obtaining a commitment from the Georgia Obstetrical and Gynecological Society to administer the maternal mortality review contract, recruiting a mortality review coordinator, and pursuing peer review protection from the state legislature for the maternal mortality review committee members. Having peer review protection established was a concern expressed by committee members. This protection provided assurances that members would not be questioned in any civil or

criminal proceedings regarding the information presented at or opinions formed by the committee. Additionally, all proceedings and activities of the committee, including documents reviewed, opinions formed, and documents produced, would be confidential and not subject to subpoena, discovery, or introduction into evidence in a civil or criminal proceeding. Peer review protection was later formalized by passage of Georgia Senate Bill 273.⁷

Four operational stipulations were incorporated into the maternal mortality review committee's charter: first, that the maternal mortality review committee be multidisciplinary and include specialists in obstetrics and gynecology, maternal–fetal medicine sub-specialists, a cardiologist, a psychiatrist, an obstetric anesthesiologist, and a neonatologist as well as nurses with expertise in labor and delivery, postpartum and prenatal care, nurse-midwives, maternal child health administrators, and epidemiologists. Second, goals for the committee included 1) reduction of maternal morbidity and mortality by identifying clinical, system, and community factors that contributed to deaths and 2) formulation of strategies to mitigate or eliminate these factors. Third, the committee would meet quarterly to review the abstracted pregnancy-associated deaths for the year. Fourth, case abstraction was to be conducted by a Georgia Obstetrical and Gynecological Society–employed trained nurse abstractor using a standardized abstraction template and would include age, race, occupation, body mass index, insurance status, number of prenatal visits, interval between delivery and maternal death, and cause of death as assigned by the death certificate.

STEP 2: DETERMINING THE METHODOLOGY FOR MATERNAL MORTALITY CASE IDENTIFICATION

Identification of all potential maternal mortalities was accomplished using several strategies, including review of 1) death certificates of women ages 10–50 years matched to birth or fetal death certificates, 2) death certificates with a checkbox indicating the decedent was pregnant at the time of death or had been pregnant in the year preceding her death, 3) surveillance of maternal mortalities submitted by mandated reporters, and 4) death certificates with a cause of death code, assigned by the National Center for Health Statistics indicating pregnancy (Chapter O in the International Classification of Diseases, 10th Revision manual).⁸ The vital records section of the Georgia Department of Public Health linked death certificates of women of reproductive age (10–50 years) to birth or fetal death certificates by using maternal key identifiers, including name and date of birth. In addition, the maternal and child health section of the Georgia Department of Public Health linked the death certificates of women of reproductive age to birth or fetal death certificates using a probabilistic match of select identities (including Social Security number, name, date of birth). These processes overlapped and were undertaken concurrently to maximize the chances of identifying all pregnancy-associated deaths, defined as a death of a woman who was pregnant at the time of death or within 365 days of death, irrespective of causes.⁹

A subcommittee of the maternal mortality review committee undertook a preliminary review of all identified cases and assigned cases for abstraction. To maximize the chances of identifying a pregnancy-related death, defined as a “death while pregnant or within one year

of pregnancy caused by a pregnancy complication, a chain of events initiated by pregnancy, or the association of an unrelated condition by the physiologic effects of pregnancy,"⁹ only suicides, homicides, and motor vehicle accidents that had occurred at 6 months or greater from the end of pregnancy were excluded from the abstraction process.

STEP 3: INTRODUCTORY MEETING OF THE MATERNAL MORTALITY REVIEW COMMITTEE

The advisory committee issued formal letters of invitation detailing the committee's purpose and goals and invited additional prospective members to an introductory meeting in September 2012, 2 years after the initial advisory committee was formed. The two major objectives for this meeting were 1) to serve as a forum for introduction of the committee members to one another and 2) to educate members about maternal mortality and the mortality review process through lectures covering the epidemiology of maternal mortality in the United States and, in Georgia, the methodology of mortality case abstraction and review. This meeting was instrumental in orienting and familiarizing committee members with the goals and methodology of case review, delineating future time commitments and setting the expectations for committee membership.

STEP 4: SECURING LEGISLATIVE PROTECTION —MATERNAL MORTALITY BILL: GEORGIA SENATE BILL 273

The advisory committee recognized very early in its deliberations the importance of both peer review protection for committee members and strengthening the statutory authority of the Commissioner of Public Health to obtain hospital records for all state maternal mortalities.⁷ To achieve these goals, a collaboration was formed between the Georgia Obstetrical and Gynecological Society and the Department of Public Health. This resulted in successful lobbying efforts to draft a Maternal Mortality Bill, Georgia Senate Bill 273,⁷ which was signed into law in April 2014. The key provisions of this bill included:

- Support for the development of a maternal mortality review committee
- Legal protection for committee members against civil and criminal liability and further dictates that committee members may not be questioned in any civil or criminal proceedings regarding information presented in maternal mortality review committee meetings
- Confidentiality of the review process
- Granting of necessary authority for the committee to collect data for case review
- Assurance of legislative interest and support in improving the problem of maternal mortality

STEP 5: THE TRIAL RUN—MOCK MATERNAL MORTALITY REVIEW

In November 2012, an initial maternal mortality review committee meeting was held. The meeting consisted of a series of mock case reviews. The nurse abstractor distributed key

information from medical records of five maternal deaths. Each case was presented in detail using the case abstraction template previously described. A discussion led by the chairman of the committee ensued and the case was designated as either pregnancy-related or pregnancy-associated. If the death was identified as pregnancy-related, a cause of death code was then assigned. Coding was based on a system developed in 1986 by the American College of Obstetricians and Gynecologists and the CDC's Maternal Mortality Study Group, which included the following 10 categories of death: hemorrhage, infection, amniotic fluid embolism, thrombotic pulmonary or other embolism, hypertensive disorders of pregnancy, anesthesia complications, cerebrovascular accidents, cardiomyopathy, cardiovascular disease, and noncardiovascular medical conditions.²

STEP 6: FORMAL REVIEW AND REPORT OF 2012 MATERNAL DEATHS

Between 2012 and 2013, Georgia's maternal mortality review committee convened quarterly and reviewed 85 maternal deaths that occurred in 2012. Twenty-five deaths (30%) were classified as pregnancy-related and 60 deaths (70%) were classified pregnancy-associated. The subcommittee identified another 12 deaths that were deemed not cases and were the result of errors in death certificate coding and, in particular, the check-box. Almost two thirds of the maternal deaths occurred more than 42 days postpartum, whereas more than half (52%) of the pregnancy-related deaths occurred within 42 days after pregnancy. The five most common causes of pregnancy-related deaths were hemorrhage (28%), hypertension (16%), cardiac disease (16%), embolism (16%), and seizures (12%). The six most frequent causes of pregnancy-associated deaths were motor vehicle accidents (15%), homicide (15%), suicide (15%), heart disease (15%), cancer (12%), and drug toxicity (12%). Additional key findings from the 2012 review were that obesity and chronic medical conditions were confounding factors that contributed to maternal mortality.⁸

The committee debated the timing of the first report of mortality review and recognized the pros and cons of issuing a report with only 1 year of data. The pros outweighed the cons and the committee issued the first year of review in June 2015. The report, available for any interested party to review on a public website,⁸ highlighted the successes in case identification, abstraction, and committee operations and provided information for areas of opportunities for prevention of maternal deaths, including introduction of statewide postpartum hemorrhage protocols, enhancement of health care provider education about medical complications of pregnancy, identification of risk factors for high-risk pregnancies, and referral of these pregnancies to appropriate maternal–fetal medicine or medical specialists. Finally, the first year of review emphasized the importance of improving the efficiency of case identification using the death certificate checkbox and fully implementing all aspects of the Maternal Mortality Bill.

SUMMARY AND LESSONS LEARNED

Through reestablishment of maternal mortality review in Georgia, we learned six valuable lessons. First, the establishment of a maternal mortality advisory committee, including key stakeholders in obstetrics, maternal child health, and epidemiology, was a crucial initial step.

The collaboration among these disciplines ensured that diverse voices were heard and were able to shape the review process.

Second, the methodology for case identification, although rigorously defined, needed additional refinement. Misidentification of a pregnancy at the time or within 12 months of the death on the checkbox on the death certificate highlights the importance of training of personnel to standardize the process of death certificate completion.

Third, the introductory maternal mortality committee meeting served as an important orientation and educational tool. At the conclusion of the meeting, committee members understood how maternal mortality reviews work, what their charge was as well as the expectations for participation in future meetings.

Fourth, the mock mortality review session served as an important trial run of the multidisciplinary mortality review committee in action.

Fifth, passage of the Maternal Mortality Bill SB 273 was a seminal event, which safeguards ongoing maternal mortality review in Georgia. The bill ensured peer review protection of committee deliberations and buttressed the enforcement of mandatory reporting of maternal deaths with full access to all medical records.

Finally, we cannot overemphasize the importance of issuing a formal report of findings. The content of the report helped to educate key health care and public health constituencies, including obstetricians and gynecologists, some of whom were not aware the committee existed and did not appreciate the public health magnitude of maternal mortality in Georgia.

Comprehensive maternal mortality review continues in Georgia. The experience gathered from ongoing committee reviews has highlighted three additional areas for future policy development. First, in women with medical comorbidities, full access to effective contraception and preconception counseling is imperative. Second, for women with medical comorbidities who become pregnant, consultation with a maternal–fetal medicine specialist is essential for coordination of prenatal care. Third, there is a need to develop policies for family and relative interviews, particularly in cases of homicide or suicide. We continue to learn from our experiences and will continue to refine our review methodology and translate our findings into practice and policy recommendations that will have a positive effect on reducing the number of pregnancy-associated and pregnancy-related deaths in Georgia. We hope others who are implementing a formal process for maternal mortality review may benefit from our work and lessons learned.

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References

1. Centers for Disease Control and Prevention. Pregnancy mortality surveillance system. Available at: <http://www.cdc.gov/reproductivehealth/maternalinfanthealth/PMSS.html>. Retrieved April 14, 2017

2. Berg CJ, Callaghan WM, Syverson C, Henderson Z. Pregnancy-related mortality in the United States, 1998 to 2005. *Obstet Gynecol.* 2010; 116:1302–9. [PubMed: 21099595]
3. Creanga AA, Berg CJ, Syverson C, Seed K, Bruce FC, Callaghan WM. Pregnancy-related mortality in the United States, 2006–2010. *Obstet Gynecol.* 2015; 125:5–12. [PubMed: 25560097]
4. Goodman D, Stampfel C, Creanga AA, Callaghan WM, Callahan T, Bonzon E, et al. Revival of a core public health function: state- and urban-based maternal death review processes. *J Womens Health (Larchmt).* 2013; 22:395–8. [PubMed: 23600436]
5. Bingham D, Strauss N, Coeytaux F. Maternal mortality in the United States: a human rights failure. *Contraception.* 2011; 83:189–93. [PubMed: 21310278]
6. *Deadly delivery: the maternal health care crisis in the USA.* New York (NY): Amnesty International; 2010.
7. Georgia Senate Bill 273: 2013–2014 regular session. Available at: www.legis.ga.gov/legislation/en-US/display/20132014/SB/273. Retrieved April 14, 2017
8. Georgia Department of Public Health. The Georgia maternal mortality 2012 case review. Available at: <https://dph.georgia.gov/maternal-mortality>. Retrieved April 14, 2017
9. Berg, C., Daniel, I., Atrash, H., Zane, S., Bartlett, L. Strategies to reduce pregnancy-related deaths: from identification and review to action. Atlanta (GA): Centers for Disease Control and Prevention; 2001.