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## Enhancing Reviews and Surveillance to Eliminate Maternal Mortality

Tegan Callahan, MPH<sup>1</sup>, Julie Zaharatos, MPH<sup>1</sup>, Amy Pierre St., MBA<sup>1</sup>, Peter Merkt, MPH<sup>1</sup>, David Goodman, PhD<sup>1</sup>

<sup>1</sup>Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia.

### Abstract

Multisectoral investments over the past decade have accelerated the growth of maternal mortality review committee (MMRC) programs across the United States. The US Centers for Disease Control and Prevention launched the Enhancing Reviews and Surveillance to Eliminate Maternal Mortality (ERASE MM) Initiative in 2019. Under ERASE MM, CDC directly funds 24 US jurisdictions supporting MMRCs in 25 states. With increased investment in programs nationally, the CDC has designed a performance management framework to, identify areas for improvement or sustained achievement, and standardize measurement of key process benchmarks across programs. This paper presents a report on the baseline measures collected through this performance management approach and suggests key partnerships required to continue to accelerate progress toward the elimination of preventable maternal mortality in the United States.

### Keywords

maternal; deaths; mortality; review; committee

### Background

Despite increasing attention over the past decade, the risk of death during and up to a year after pregnancy from pregnancy-related causes has largely remained unchanged in the United States. The most recent national data available from the US Centers for Disease Control and Prevention's (CDC) Pregnancy Mortality Surveillance System (PMSS) shows a pregnancy-related mortality ratio of 17.3 deaths per 100,000 live births. In addition, analysis of PMSS data has consistently revealed evidence of disparities experienced by Black and American Indian/Alaska Native birthing populations and the persistence of these disparities regardless of age, education level, or location.<sup>1,2,3</sup>

**Corresponding Author:** Tegan Callahan, MPH, Centers for Disease Control and Prevention, 4770 Buford Hwy NE, Atlanta, GA 30341, tcallahan@cdc.gov.

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Author Disclosure Statement

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State and local maternal mortality review committees (MMRCs) remain best positioned to comprehensively identify recommendations for preventing deaths during pregnancy or within one year after the end of pregnancy.<sup>4</sup> Identifying pregnancy-associated deaths, which are deaths that occur while pregnant or within one year of the end of pregnancy, irrespective of cause, are the starting place for all MMRCs. Through review of clinical and non-clinical records capturing the care and other experiences of the individual decedent, MMRCs make a determination on if a death was pregnancy-related. Pregnancy-related deaths are deaths caused by a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy. While all MMRCs generally include some degree of review for each pregnancy-associated death identified, MMRCs can vary in scope of what types of pregnancy-associated deaths they fully review.

The growth of MMRCs across the United States from 2010 to the present day suggests an ongoing movement across the country to expand MMRC approaches. In 2010, there were only 19 known review committees in the United States.<sup>5</sup> By 2017, there were 34 review committees in the United States.<sup>6</sup> In 2021, there are now 50 review committees and four additional jurisdictions are in the process of establishing MMRCs. Beginning in 2016, the CDC expanded and accelerated work with partners to define the functions of an MMRC and has offered support on operationalization of programs nationally.<sup>6</sup> In 2017, the CDC introduced the Maternal Mortality Review Information Application (MMRIA) to promote the standardization of data across programs. Currently, 48 of the 50 existing MMRCs are using the MMRIA system. In this report, we provide an update on the CDC's ongoing work for establishing a national approach to maternal mortality reviews.

While our efforts – and those led by our partners – have been ongoing, public investment in MMRC programs has recently accelerated. The US Congress passed the Preventing Maternal Deaths Act in 2018<sup>7</sup> and appropriated funding beginning in FY 2019 to support MMRCs. This direct support to US jurisdictions is the cornerstone of the CDC's Enhancing Reviews and Surveillance to Eliminate Maternal Mortality (ERASE MM) Initiative.<sup>8</sup> Under ERASE MM, the CDC funds 24 US jurisdictions supporting MMRCs in 25 states and continues to build upon previous efforts and partnerships to:

- facilitate an understanding of the drivers of maternal mortality and complications of pregnancy and better understand the associated disparities through comprehensive, standardized data collection;
- determine what interventions at patient, provider, facility, system, and community levels will have the most effect on preventing maternal mortality; and
- inform the implementation of initiatives in the right places for families and communities who need them most.

## **ERASE Maternal Mortality Performance Management Approach**

CDC designed a performance management framework to help focus foundational MMRC inputs and activities such as staffing, data access, committee membership, timely case

identification and review, data use, and use of data to inform prevention activities.<sup>9</sup> In addition, we will use the performance management framework and the routine review of information collected from funded jurisdictions to identify areas for improvement or sustained achievement, and standardize measurement of key process benchmarks across programs. The ERASE MM performance management framework has ten priority performance measures (Table 1). These measures support ongoing assessment of the ERASE MM initiative and provide insight into the ongoing challenges and opportunities for MMRC programs within the US.

The priority measures are designed to align with critical steps along a ‘data to action’ continuum for MMRCs. This continuum begins with the MMRC program’s ability to identify pregnancy-associated deaths and abstract individual case information for review by the MMRC. Next, the multidisciplinary review of all potentially pregnancy-related deaths within a jurisdiction’s population, and identification of contributing factors leads to recommendations for prevention. Recommendations are specific to each death and documented in the MMRIA data system. Documentation from each death feeds into aggregate data that can be systematically analyzed. Finally, key analysis findings are prioritized and disseminated to inform action. Figure 1 categorizes ERASE MM priority performance measures along this data to action continuum.

Through baseline reporting and review of performance on these measures at the MMRC jurisdiction level, we have been able to discuss individual and relative achievement with funded MMRC jurisdictions– in order to identify best practices and opportunities for targeted technical assistance to achieve programmatic goals.

## **ERASE Maternal Mortality – Achievement Across the Data to Action Continuum at Baseline**

Accurate and timely identification of pregnancy-associated deaths is the initial step in the data to action continuum supported through ERASE MM investments. Timely identification allows programs to start the time-consuming and fundamental processes of confirming pregnancy-status, requesting records, and abstracting information from medical and non-medical sources for each death. These steps culminate in the development of a narrative for each death to facilitate committee deliberations. In our baseline analysis of performance across funded MMRC jurisdictions we found that only 34% (9/26\*) of jurisdictions had met the benchmark of complete case identification of the 2018 cohort within one year of date of the death. We purposefully calculate this measure as one year from day/month/year of death instead of one year from the end of an annual cohort to increase the timely use of routine, incremental procedures for the identification of pregnancy-associated deaths. Further achievement on this measure will largely be driven by increased communications between MMRC programs and their jurisdictional-level colleagues in Vital Records Offices. Jurisdictions already reporting achievement of this benchmark have well established communication and data sharing between these programs, largely allowing

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ERASE MM directly funds 24 US jurisdictions supporting MMRCs in 25 states and 2 cities. The number of distinct MMRC programs reporting on ERASE MM performance measures across these funded jurisdictions is 26.

MMRC programs to identify deaths based on provisional death record files instead of waiting for a final, annual file to be released. In addition, MMRC programs continue to explore incorporating other population-based data sources for pregnancy-associated death identification – including Medicaid data or state hospital discharge systems.<sup>10</sup>

Achieving an end to preventable maternal mortality means considering the context of a pregnant or postpartum person’s life and conducting a comprehensive review of the events leading up to their tragic death. To embrace this broader public health perspective on maternal mortality, MMRCs have expanded definitions of ‘subject matter expertise’ required for review of a death and are adjusting their committee membership at various rates. At baseline, funded MMRC jurisdictions reflected a range of achievement toward a broader, multidisciplinary membership – and a programmatic target of 40% non-clinical to 60% clinical active membership. The average ratio was 29% non-clinical to 67% clinical active membership, with a few committees reporting 100% clinical membership. Ensuring the right voices are at the table may be an ongoing process for programs nationally and will require expanded partnerships at every level to create and sustain further achievement.

Completing case review within two years of the date of death is the next essential step to providing timely information to stakeholders to inform targeted actions preventing future deaths. Five geographically diverse jurisdictions reported achievement of 90% or above within two years of a date of death (day/month/year) for their 2018 cases, demonstrating an ability to review pregnancy-associated deaths within two years regardless of caseload and subsequent variation in abstraction and review burden. While reporting currently tends to happen through annual cohorts, we envision a national approach, and perhaps regional approaches, that can report population level information on reviewed deaths quarterly or at a variety of more incremental cycles to further accelerate national progress in prevention of pregnancy-related mortality.

Review of our baseline measures across ERASE MM MMRC jurisdictions showed that all jurisdictions have opportunities to more frequently report their findings and implement actions. Over half of the ERASE MM jurisdictions did not report any analysis of their review committee data during our baseline reporting period. This may have been due to staff turnover and a persistent need for increased analysis capacity within partner jurisdictions. Not conducting analyses of MMRC data, however, limited the opportunities to disseminate findings to stakeholders– and was reflected by just under half of the ERASE MM jurisdictions not reporting *any* dissemination of MMRC data during our baseline period. A fundamental and ongoing goal of ERASE MM activities is to strengthen data analysis and dissemination. One positive sign is that roughly half of the funded MMRC jurisdictions have strong examples of data use that can be shared for peer learning or documented to identify best practices in dissemination.

While there are multiple opportunities to increase MMRC data use, generating MMRC recommendations at the individual death level in a format specifying “*who* should do *what, when*” is a critical step towards providing stakeholders with clear recommendations for action. At baseline, funded MMRC jurisdictions reported on average 40% of recommendations in MMRIA were written in a *who/what/when* format. Complete, data-

driven recommendations – an immediate, programmatic output of MMRCs – would ideally inform broader stakeholder action in both clinical and non-clinical settings. While we recognize there are diverse influences on decisions for taking action to improve maternal health within a specific jurisdiction’s context, our ERASE MM performance management framework is built on an understanding that MMRC data would have a direct impact on these decisions among stakeholders. Our framework therefore captures achievement of data-driven actions by asking for ongoing implementation of specific data-driven clinical and non-clinical recommendations. At baseline, approximately half (12) of funded MMRC jurisdictions reported implementation of clinical MMRC recommendations while less than one fifth (4) reported any implementation of non-clinical or community-level MMRC recommendations for action. To increase implementation of all types of relevant, data-driven recommendations by ERASE MM funded jurisdictions, partnerships at the local, state, and national levels of the ERASE MM initiative will continue to be key to eliminate preventable maternal mortality in the United States.

### **Continued Partnerships Required for Success**

The MMRIA Committee Decisions Form specifically prompts committees to consider issues within a specific death and generate recommendations for prevention at not just the provider or patient/family level, but also at the wider institutional and societal levels within which contributing factors manifest, i.e. the facility, system, and community levels. Despite these prompts in the MMRIA form, documenting recommendations holistically across these levels is a persistent challenge for MMRCs. Early analyses of aggregate data from across jurisdictions showed contributing factors noted in cases reviewed – and recommendations for action – were heavily distributed at the patient/family or provider levels. While these may be the levels at which contributing factors manifest, the opportunity to intervene with the most impact may be at a different level. For example, patient-specific behaviors or knowledge manifest at the patient level (e.g. lack of knowledge on symptoms), but a comprehensive recommendation for action would occur at a provider or facility level (e.g. robust patient education and materials provided at every interaction).

Broadening the expertise of MMRCs is key to expanding the perspectives considered throughout MMRC case review and deliberation. Extending MMRC membership includes individuals from communities experiencing disproportionate burdens of maternal mortality or who offer other lived-experience expertise is an essential partnership for MMRCs. With support from ERASE MM and in partnership with the Association of Maternal and Child Health Programs, Black Mamas Matter Alliance is conducting formative work with MMRCs to inform planned guidance on how MMRC programs can successfully engage community representatives in and share power throughout committee processes. With the expanded resources provided by ERASE MM funding, many ERASE MM programs have begun to take new initiative in this area. Some programs are establishing payment models for community members’ participation in MMRC meetings, which can dissolve barriers to participation and appropriately compensate them for their expertise. Other committees are operationalizing co-chair models, including models of shared leadership that elevate expertise on health equity, behavioral health, and injury prevention to the same level as clinical committee leadership. MMRC data repeatedly shows that ending

preventable maternal mortality cannot happen with clinical actions alone. Shifting away from a sole focus on clinical leaders and clinical recommendations enables a wider group of stakeholders to share the burden of developing recommendations and taking action to prevent maternal mortality.

Partnerships *across* jurisdictions are critical to fully achieve the ERASE MM goals. Since late 2019, CDC has coordinated monthly MMRIA User Office Hours focused on Abstractor, Coordinator, and Analyst roles<sup>11</sup> within jurisdictions. Over 70 participants regularly attend these virtual office hours. In addition to these regular collaborative learning opportunities across jurisdictions, CDC has hosted webinars on emerging topics including virtual committee facilitation, communicating racialized data, data visualization, and qualitative analysis. The annual MMRIA User Meeting has continued to grow in attendance, between 2017 and 2021 the number of jurisdictions attending the meeting nearly doubled from 27 to 53. This annual meeting provides targeted content and networking opportunities across jurisdictional programs and with national partners and member organizations.

Supporting regional or other broader jurisdictional partnerships are similarly needed to truly achieve a comprehensive, national approach. One essential partnership for a national program will be with Tribes and Tribal Organizations. Non-Hispanic American Indians and Alaska Natives are more than twice as likely to die of a pregnancy-related cause compared to non-Hispanic White women.<sup>12</sup> For an MMRC to truly benefit Native populations, it must be led by Tribal stakeholders and guided by a respect for Tribal sovereignty and self-determination. With support from CDC, the National Indian Health Board is assisting Tribes and Tribal organizations to conceptualize, design, and implement Tribally-led MMRCs.<sup>13</sup>

Another key partnership required to complete the vision of a national MMRC program will be with the US Armed Forces. A death while pregnant or postpartum among an active service member or military dependent can span services and care provided on a military base and off base in a purchased care setting. Similarly, recommendations for prevention will likely span both jurisdictions. CDC has begun to define the potential opportunities for partnership across the Armed Forces or between Armed Forces and state-level programs through a partnership with the American College of Obstetricians and Gynecologists Armed Forces District and the Defense Health Agency's Women and Infants Clinical Community.

## Persistent Challenges and Opportunities

Clear challenges persist despite the successes to date. The capacity for data use, and dissemination of information that effectively translates into action, needs to be addressed by all ERASE MM partners to achieve our shared goals. In addition, MMRCs are continuing to broaden their mission and scope beyond medical causes of death, which may require some programs to revisit definitions and processes they have historically used. Broadening reviews to achieve public health goals requires increased committee membership and expanded data sources for informing the review of each death. As with any change management process, there may be conflict as an expanded approach is established. Expanded approaches often require more human and fiscal capital, particularly in jurisdictions that experience a high number of pregnancy-associated deaths. ERASE MM partnerships, as described above, are

key components of ERASE MM success as we address ongoing challenges and changes to establish a national approach.

In addition to expanding membership, committees are expanding their access to data sources on community level factors and individual lived experience as relayed through next of kin interviews. CDC has partnered with the Emory Rollins School of Public Health to develop a dashboard of Community Vital Signs, based on an overarching health equity framework<sup>14</sup> that is customizable for case-specific geolocated data. Informant interviews are also emerging as a complementary data source for medical and social service records among some committees. Informant interviews with the family of a decedent provide more insight into their lived experience and broader context than medical and social service records provide. One committee chair recently told CDC, now that their committee is utilizing an informant interview approach, she feels all cases would be incomplete without them. CDC and partners provided committees with an informant interview guide<sup>15</sup> to support these emerging approaches.

MMRIA, the data system supporting a common language across MMRCs, will also need to continually be modernized to address emerging needs and opportunities under ERASE MM. We have made updates in response to user feedback and to increase overall functionality. Future major updates include more capacity for data quality checks within the system and increased interoperability of the system with other data files or systems to reduce data entry or management burden among MMRC programs. Specifically, CDC is partnering with the National Association for Public Health Statistics and Information Systems to increase timely and consistent identification of pregnancy-associated deaths by processing provisional vital records data received directly from states through the National Association for Public Health Statistics and Information Systems' State and Territorial Exchange of Vital Events system. CDC is integrating this work with MMRIA to support the automated uploads of death record data and of data from any birth or fetal death records that match to a death record.

MMRIA has also been modified to respond to the needs identified by MMRCs for broadening contributing factors considered by MMRCs. At the request of MMRCs, new contributing factor classes on discrimination, interpersonal racism, and structural racism were added to MMRIA in 2020. To do so, CDC worked with the CDC Foundation and they coordinated a stakeholder workgroup in 2019 that established definitions for these new contributing factor classes.<sup>16</sup> Both challenges and opportunities were identified as committees began to utilize these new potential contributing factors in reviews of individual deaths. Many MMRCs struggled with the burden of proof or 'evidence' within records required to document discrimination or racism during review of an individual death – and many worked to build internal capacity among members of the committee to reduce the influence of their own implicit biases in review. In 2021, the CDC announced new partnerships with the U.S. Department of Health and Human Services Office of Minority Health that will strengthen ongoing development of tools for MMRCs to utilize throughout program activities to better address larger social determinants of health and specifically identify events of discrimination and racism in healthcare settings for use during case narrative development and review. The CDC and all ERASE MM partners must continue to embrace these challenges as part of the process for moving toward an improved ability

to document the health impact of discrimination and racism within our data system and our work more broadly.

Finally, the COVID-19 pandemic presented a mix of challenges and opportunities for MMRC programs and ERASE MM partnerships. Throughout 2020 and 2021, there was growing interest in prioritizing review of pregnancy-associated COVID-19 deaths to inform larger public health response goals. The strengths of an MMRC, including the time required for comprehensive record abstraction and an overall population-level approach, may fundamentally make it a less effective body for outbreak investigation and immediate response activities. However, the role MMRCs can play in medium term discovery may still be developing. As the COVID-19 pandemic has the potential to both directly and indirectly exacerbate the maternal mortality crisis, MMRCs may need to adopt emerging best practices for timely review of pregnancy-associated COVID-19 deaths.<sup>17</sup> Furthermore, despite the surge of competing priorities at a jurisdictional level throughout the COVID-19 response, a rapid pivot to virtual MMRC meetings was observed across every jurisdiction, which demonstrates a common commitment to this important work despite emergent competing priorities.

## Closing

CDC has launched a new phase in our ongoing effort to support MMRCs across the United States. Early results on the priority performance measures among funded MMRC jurisdictions demonstrate we have a strong foundation on which to continue to build a resilient national network of fully functioning MMRCs. The continued progress of the ERASE MM program is dependent on a continued strength of diverse partnerships.

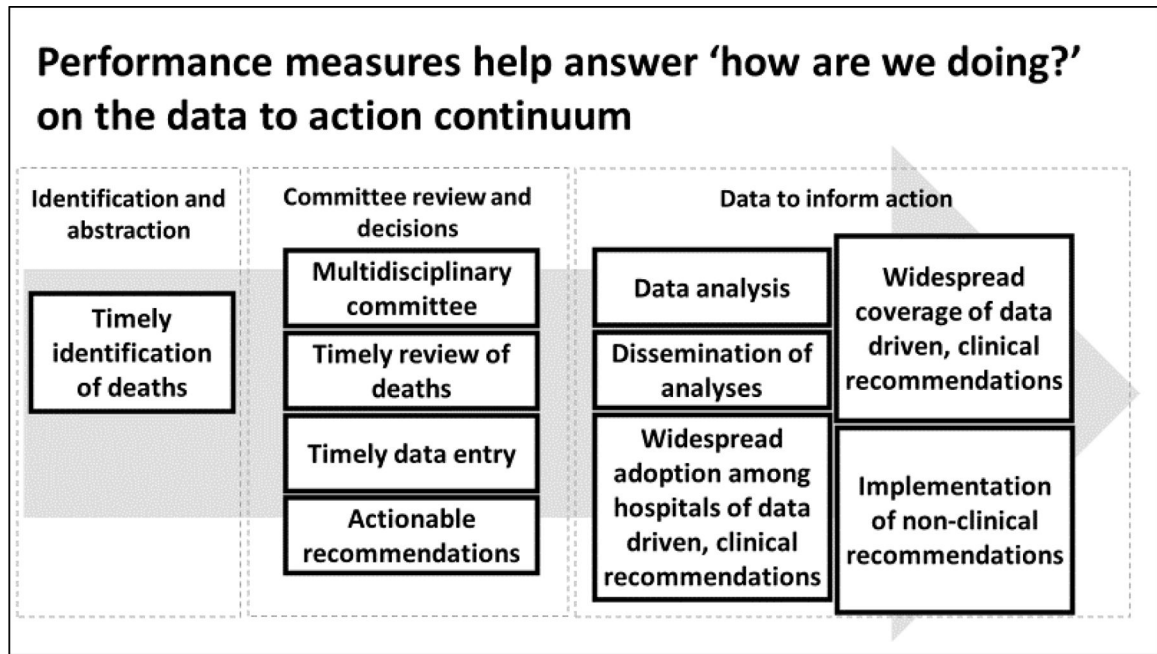
MMRCs are the most comprehensive and complete source of data for jurisdiction-specific pregnancy-related mortality ratios, providing understanding of both the medical and non-medical contributors to deaths and of the priority interventions required to prevent them. Together with ERASE MM jurisdictions and national partners, we continue to build jurisdictions' capacity to understand and eliminate preventable maternal mortality.

## References

1. Callaghan WM. Overview of maternal mortality in the United States. *Semin Perinatol.* 2012;36:2–6. [PubMed: 22280858]
2. Petersen EE, Davis NL, Goodman D, et al. Racial/ethnic disparities in pregnancy-related deaths — United States, 2007–2016. *MMWR Morb Mortal Wkly Rep.* 2019;68:762–765. [PubMed: 31487273]
3. Merkt PT, Kramer MR, Goodman DA, et al. Urban-rural differences in pregnancy-related deaths, United States, 2011–2016 [published online ahead of print, 2021 Feb 25]. *Am J Obstet Gynecol.* 2021;S0002–9378(21)00144–7.
4. St Pierre A, Zaharatos J, Goodman D, et al. Challenges and opportunities in identifying, reviewing, and preventing maternal deaths. *Obstet Gynecol.* 2018;131(1):138–142. [PubMed: 29215526]
5. Goodman D, Stampfel C, Creanga AA, et al. Revival of a core public health function: State- and urban-based maternal death review processes. *J Womens Health (Larchmt).* 2013;22:395–398. [PubMed: 23600436]
6. Zaharatos J, St Pierre A, Cornell A, Pasalic E, Goodman D. Building U.S. capacity to review and prevent maternal deaths. *J Womens Health (Larchmt).* 2018;27(1):1–5.



7. Preventing Maternal Deaths Act in 2018. H.R.1318. 115th Congress. 2017–2018.
8. Centers for Disease Control and Prevention. Enhancing Reviews and Surveillance to Eliminate Maternal Mortality. 2019. Available at: <https://www.cdc.gov/reproductivehealth/maternal-mortality/erase-mm/index.html>
9. Building U.S. Capacity to Review and Prevent Maternal Deaths. Maternal Mortality Review Committee Logic Model. 2021. Available at: <https://reviewtoaction.org/sites/default/files/2021-03/MMRC%20Logic%20Model%2004-03-20.pdf>.
10. Building U.S. Capacity to Review and Prevent Maternal Deaths. Reference Guide for Pregnancy-Associated Death Identification. 2020. Available at: <https://reviewtoaction.org/sites/default/files/2021-03/Reference%20Guide%20for%20Pregnancy-Associated%20Death%20Identification.pdf>
11. Building U.S. Capacity to Review and Prevent Maternal Deaths. Getting Started: Staffing. 2021 Available at: <https://reviewtoaction.org/implement/getting-started/staffing>
12. Petersen EE, Davis NL, Goodman D, et al. Racial/ethnic disparities in pregnancy-related deaths — United States, 2007–2016. *MMWR Morb Mortal Wkly Rep.* 2019;68:762–765. [PubMed: 31487273]
13. National Indian Health Board. Maternal Mortality Review: A Potential Strategy for Optimizing Native Women’s Health. Available at: <https://www.nihb.org/docs/07152020/Tribal%20MMRC%20Fact%20Sheet%205.21.20.pdf>
14. Kramer M, Strahan A, Preslar J, et al. Changing the conversation: applying a health equity framework to maternal mortality reviews. *Am J Obstet Gynecol.* 2019;221(6):609.e1–609.e9.
15. Building U.S. Capacity to Review and Prevent Maternal Deaths. Informant Interview Guide for Maternal Mortality Review Committees. 2019. Available at: <https://reviewtoaction.org/national-resource/informant-interview-guide-maternal-mortality-review-committees>
16. Building U.S. Capacity to Review and Prevent Maternal Deaths. Using MMRIA to Document Discrimination and Racism. 2020. Available at: <https://reviewtoaction.org/national-resource/webinar-using-mmria-document-discrimination-and-racism-series>
17. Metz TD, Collier C, and Hollier LM. Maternal mortality from Coronavirus Disease 2019 (COVID-19) in the United States. *Am J Obstet Gynecol.* 2020. 136(2):313–316. [https://journals.lww.com/greenjournal/Abstract/9000/Maternal\\_Mortality\\_From\\_Coronavirus\\_Disease\\_2019.97312.aspx](https://journals.lww.com/greenjournal/Abstract/9000/Maternal_Mortality_From_Coronavirus_Disease_2019.97312.aspx)



**FIG. 1.** Performance measures help answer “how are we doing?” on the data to action continuum.

**Table 1:**ERASE MM<sup>†</sup> Priority Performance Measures

Measure	Numerator or Description	Denominator (if applicable)
<b>Timely case identification</b>	# of pregnancy-associated deaths that occurred in YYYY identified within 12 months of death (mm/dd/yyyy)	# of pregnancy-associated deaths that occurred in YYYY identified within and after 12 months of death (mm/dd/yyyy)
<b>Multidisciplinary committee review of cases</b>	During the reporting period, % of active review committee members who participated in case review with clinical expertise compared to % of active review committee members who participated in case review with non-clinical expertise	
<b>Timely committee review</b>	# of deaths that occurred in the calendar year and identified for committee review, that were reviewed by the committee within 24 months of death of death (mm/dd/yyyy)	# of deaths that occurred in the calendar year and identified for committee review
<b>Timely data entry of committee decisions</b>	During the reporting period, # of deaths with committee decisions documented in MMRIA within 30 days of review of a death by the MMRC	During the reporting period, # of deaths reviewed by the MMRC
<b>Completeness of MMRC recommendations in MMRIA</b>	During the reporting period, # of recommendations that answer What/Who/When that are documented in MMRIA	During the reporting period, # of recommendations that are documented in MMRIA
<b>MMRIA data analysis</b>	During the reporting period, # of MMRIA data analyses on burden and opportunities for prevention (and description)	
<b>Dissemination of analyses</b>	During the reporting period, # of dissemination activities to the public, clinicians, and policy makers (and description)	
<b>Widespread adoption among hospitals of data driven, clinical recommendations</b>	# of acute care facilities within jurisdiction implementing data-driven, clinical recommendations from MMRIA data	# of acute care facilities within jurisdiction
<b>Widespread coverage of data driven, clinical recommendations</b>	# of hospital births within jurisdiction covered by facilities implementing data-driven, clinical recommendations from MMRIA data	# of hospital births within jurisdiction
<b>Implementation of non-clinical recommendations</b>	# of data driven, non-clinical recommendations being implemented from MMRIA data	

<sup>†</sup>ERASE MM: Enhancing Reviews and Surveillance to Eliminate Maternal Mortality