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Addressing Racial Disparities in Pregnancy-Related Deaths: An Analysis of Maternal Mortality-Related Federal Legislation, 2017 -2021

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Abstract

There has been increasing national attention to the issue of racial disparities in pregnancy-related deaths. Federal legislation can support approaches at multiple levels of intervention to improve maternal health. As part of the CDC Policy Academy, a team of CDC staff completed a policy analysis to determine the approaches addressed in federal legislation to reduce racial disparities in pregnancy-related deaths. We analyzed federal maternal mortality legislation introduced January 2017 through December 2021. Common approaches addressed by the legislation were categorized into themes and reviewed for their alignment with approaches identified in clinical and public health literature to reduce pregnancy-related deaths, with an emphasis on social determinants of health (SDOH) approaches and reducing racial disparities. Thirty-seven unduplicated bills addressed pregnancy-related deaths, including 27 House or Senate bills that were introduced but not passed, 6 resolutions highlighting the maternal health crisis, 2 bills that passed the House only, and 2 bills enacted into law (Preventing Maternal Deaths Act of 2018 and Protecting Moms Who Served Act). The most common themes mentioned in federal legislation were improving maternal health care, addressing health inequities and SDOH, enhancing data, and promoting women's health. Legislation focused on health inequities and SDOH emphasized implicit bias training and improving SDOH, including racism and other social factors. The reviewed federal legislation reflected common clinical and public health approaches to prevent pregnancy-related

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Author Disclosure Statement

No competing financial interests exist.

Supplementary Material

Supplementary Table S1

deaths, including a significant focus on reducing bias and improving SDOH to address racial disparities.

Keywords

maternal mortality; pregnancy-related deaths; health status disparities; public policy

Introduction

The United States has one of the highest rates of pregnancy-related deaths among high-income countries. ^{1,2} The Pregnancy Mortality Surveillance System defines a pregnancy-related death as the death of a woman during pregnancy or up to a year postpartum from causes related to or aggravated by the pregnancy or its management, but not from incidental or accidental causes. ³ Pregnancy-related mortality ratio (PRMR) is the number of pregnancy-related deaths per 100,000 live births. The PRMR has not improved over time, and in 2018 the PRMR was 17.3 deaths per 100,000 live births in the U.S. ³ Whether the actual risk of a woman dying from pregnancy-related causes has increased is unclear; identification of pregnancy-related deaths has improved over time, and in recent years, PRMRs have been relatively stable. ^{3,4} In addition to pregnancy-related deaths, 50,000 women annually experience severe maternal morbidity (SMM), or unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health. ⁵

Racial disparities in pregnancy-related deaths and SMM are well-documented.^{6,7} Non-Hispanic (NH) Black and American Indian/Alaska Native (AI/AN) women have higher PRMRs than all other racial and ethnic groups (Fig. 1).⁷ Higher PRMRs exist for NH Black and AI/AN women in both rural and urban areas.⁸ Similarly, NH Black, AI/AN, and women from other racial/ethnic groups have rates of SMM higher than NH White women.^{6,9} Racial and ethnic disparities in PRMR increase with maternal age and are present at all education levels.⁷

Improvement in health care is a common focus of approaches to reduce pregnancy-related deaths. ^{10,11} Legislative policies that reflect the state of the science regarding not only improvements in health care but also social determinants of health (SDOH), may optimize success to reduce racial disparities in pregnancy-related deaths. ^{12,13} Examples of SDOH include economic stability, education access and quality, neighborhood and built environment, social and community context, and structural factors such as systemic racism and public policies. ¹⁴ Adverse SDOH can contribute to health inequities, which are systematic, unfair, and avoidable differences in health opportunities and health outcomes between population groups at different levels of social position. ¹⁵

SDOH have been documented as factors contributing to the disproportionate burden of pregnancy-related deaths among non-Hispanic Black women. ^{13,16,17} Therefore, our purpose was to conduct a review of federal legislation to determine what common clinical and public health approaches were reflected in existing and proposed federal policies to reduce pregnancy-related deaths, with a special interest in maternal mortality legislation that

highlighted SDOH approaches and reducing racial disparities in pregnancy-related deaths. We also highlight the CDC Policy Academy and the CDC Policy Process that undergirded this analysis.

CDC Policy Academy and Policy Process

The CDC Policy Academy (Academy) is a training program initiated in 2015 by the Office of the Associate Director for Policy and Strategy (OADPS) to develop capacity among CDC staff to identify and analyze policy issues related to public health priorities. ¹⁸ The program hosts an annual cohort of participants (known as fellows) who have been competitively selected to participate in the Academy. Teams of fellows participate in an 8-month training program to develop competencies in policy analysis, policy evaluation, and policy development. Each team is required to complete a policy project on a public health priority of interest to their division or center/institute/office, and teams are aided by coaches, subject matter experts, Academy instructors, and others as appropriate to the policy topic. Teams of fellows present findings of their projects at a graduation event which concludes the program, and they are encouraged to utilize findings in their work.

From April to December 2019, four members of the Office of Minority Health and Health Equity (OMHHE) participated in the CDC Policy Academy. The OMHHE team consisted of a health scientist, two epidemiologists, and a health communications specialist coached by the CDC Office of Women's Health Director, the OMHHE Deputy Director, and the OMHHE Associate Director for Policy. The team selected pregnancy-related deaths as their policy focus during the Academy, which was consistent with OMHHE's focus on maternal mortality as a priority health equity area.

A primary component of the CDC Policy Academy training was the CDC Policy Process (Fig. 2).¹⁹ The CDC policy process consists of five core domains: problem identification; policy analysis; strategy and policy development; policy enactment; and policy implementation; and each core domain intersects with the overarching domains of stakeholder engagement and education and evaluation.¹⁹ The OMHHE policy academy team restricted their activities to the problem identification and policy analysis domains during their training.

The problem identification domain involves reviewing data and literature to determine public health burden, identify contributing factors, assess gaps in current research or actions, and determine what is known about existing or potential policy options related to a selected issue. ²⁰ The OMHHE policy academy team reported statistics on racial disparities in the PRMR (Fig. 1) to help illustrate the magnitude of the problem. The team also outlined key factors contributing to a higher proportion of pregnancy-related deaths for African American women, including maternal cardiovascular conditions and complications, ⁷ inadequate access to and quality of obstetric or prenatal care services, ²¹ barriers to patient-provider communication, ²² and socioeconomic conditions. ²³

Policy analysis is another major function of the CDC policy process.²⁴ Policy analysis involves utilizing systematic methods to identify different policy options and prioritize and

select the most effective, efficient, and feasible policy options to address the problem, including fiscal and economic considerations. ²⁴ Based on evidence of the heightened public attention on maternal mortality, ^{25,26} the high rate of preventable pregnancy-related morbidity and mortality and large racial disparities in the United States, ⁷ and the emergence of studies with positive findings on the effectiveness of policy interventions to address maternal mortality, ^{27–30} the team hypothesized that federal legislation to reduce racial disparities in pregnancy-related deaths would have moderate legislative interest and the potential for significant public health and economic impact due to reduced severe complications of pregnancy³¹ that may be demonstrated with additional research and evaluation studies. The team then conducted a review of federal legislation, introduced or enacted from 2017 to 2019, to identify policy options to address maternal mortality; an updated search of 2020–2021 legislation was completed after the Academy, and both searches were combined for the current analysis. The team did not rank or prioritize policy options, which are additional steps in the policy analysis process. ²⁴

Materials and Methods

Ethical statement

This activity was reviewed by CDC and was conducted consistent with applicable federal law and CDC policy.

We searched the Westlaw online legal database for federal legislation and laws related to maternal mortality using search terms "maternal mortality" or "maternal deaths" or "pregnancy-related deaths" and "United States." Dates were restricted to the 115th Congress (January 2017-December 2018), 116th Congress (January 2019-December 2020), and 117th Congress, Session 1, (January-December 2021). The search produced a list of titles and summary text which we reviewed for relevance and duplication.

We included introduced and enacted federal legislation (*i.e.*, bills, resolutions, and laws) that indicated a primary purpose or focus on addressing maternal mortality in the United States. We excluded legislation and laws that incidentally or indirectly addressed maternal mortality or focused on maternal mortality outside the United States. We counted related bills or resolutions introduced in both the Senate and the House of Representatives as one piece of legislation. We only included the latest version of bills introduced in more than one congressional period during the combined study period. In addition to the Westlaw search, we did a validation search in the Congress.gov database (www.congress.gov) to review full text and detailed actions for the selected legislation and to determine if additional legislation meeting our search criteria would be retrieved. This layered approach was used to ensure that the coverage of the search was optimized.

Applying the inclusion criteria to the layered search approach generated a final list of introduced and enacted legislation, which was validated by two team members. Each member reviewed the full text of each piece of legislation included on the final list and summarized how maternal mortality was addressed. The team members did not develop a pre-selected list of focus areas to search for; hence they used an inductive process to identify and summarize all approaches to address maternal mortality that were mentioned in the

legislation. The team members consolidated the approaches identified in the legislation into categories or themes, and the appropriateness of the themes was jointly validated by the team members.

Results

The search produced 111 individual bills, resolutions, or laws that addressed maternal mortality during our date search limits. After removing the earlier versions of bills reintroduced in a later session and combining related House/Senate bills and resolutions into pairs, where each related pair or group counted as one bill or resolution, we identified 37 individual or grouped pieces of federal legislation* related to maternal mortality introduced or passed in Congress between January 2017 and December 2021. The final list of legislation (n = 37) consisted of 27 bills that were introduced but not passed in either the House or Senate; 6 simple resolutions (3 introduced in the House; 1 introduced in the Senate; and 2 related resolutions introduced in both the House and Senate) that acknowledged and highlighted various aspects of the maternal health crisis; 2 bills that passed the House only (H.R. 959 proposing the Black Maternal Health Momnibus Act of 2021^{\dagger} and H.R. 4995 proposing the Maternal Health Quality Improvement Act of 2020); and 2 bills that passed both the House and Senate and were enacted into law -- Preventing Maternal Deaths Act of 2018 (Public Law 115-344) and Protecting Moms Who Served Act (Public Law 117-69) (Table 1).

The legislation varied in scope; however, we identified four main themes: health care related approaches, enhancing data, health inequities and SDOH, and health promotion. Legislation and associated themes are outlined in Table 1. Each piece or group of legislation is identified by Table 1 reference letter (A--Y) for specification in this report. The health care theme was addressed in most legislation (n = 28), followed by health inequities and SDOH (n = 25), enhancing data (n = 14), and health promotion (n = 9).

Health care-related approaches

Most legislation included in the review addressed health care. The health care theme encompassed health care quality, health insurance coverage, access to care for pregnant and postpartum women, and training of health care providers. Bills focused on health care quality (H, J, L, R, Y) aimed at identifying, developing, or implementing models and best practices for the prevention of maternal mortality including funding for quality of care initiatives targeted to maternal mortality review committees (MMRCs), hospitals, professional groups, and perinatal quality collaboratives (A5, H, R) and an Alliance for Innovation on Maternal Health (AIM) grant program (J) to develop and implement "maternal safety bundles" for hospitals and clinics to practice standardized and evidence-based maternal health care.

^{*11} of the 12 titles included in H.R. 959 (117th Congress, 2021) were originally introduced as individual bills. For purposes of our analysis, we counted and included each original bill as well as H.R. 959. Title X of H.R. 959 was also counted separately. †Provisions of the Black Maternal Health Momnibus Act of 2021 (H.R. 959) passed the House as part of the Build Back Better Act (H.R. 5376).

Legislation with a health care theme also addressed access and health insurance coverage for maternity care and services, including allowing Medicaid coverage for maternal care provided by doulas and midwives (N, T), ensuring coverage for maternity care in the health care exchanges (C), providing federal funding to states for the purpose of extending Medicaid eligibility for low-income mothers from 60 to 365 days after the last day of a pregnancy (A, C, L, N, T), and requiring coverage of oral health services for pregnant and postpartum women (N).

Access to care components included improving maternal and obstetric care in rural areas by establishing rural obstetric network grants, expanding telehealth resources, and training practitioners to provide maternal and obstetric services in rural communities (A8, I, R). Other bills focused on coordination of care, including medical home models to ensure integrated and high-quality maternity care and support services for pregnant and postpartum women (B, N), demonstration projects to expand access to health care services and compare effectiveness of interventions to reduce disparities in maternity services and outcomes (X), and improvement in mental health care for pregnant and postpartum women (A6). The bill requiring the Veteran's Administration to implement a maternity care coordination and provider training program became law (A3).

Enhancing data

Elements captured by the enhancing data theme sought primarily to establish and sustain state-level MMRCs for enhanced collection and reporting of pregnancy-related death data and identifying related causes of deaths based on detailed case reviews (J, W, X, Y), collect and analyze data to evaluate and inform clinical best practices and safety bundles for maternity care (L), and improve maternal and obstetric care data in rural areas (I). The Preventing Maternal Deaths Act of 2018, enacted into law on December 21, 2018, included a major investment in MMRCs to enhance and understand pregnancy-related death data (W).

Health inequities and SDOH

Several bills had a primary focus on health inequities or SDOH. Bills addressed health inequities and SDOH related to implicit bias in patient-provider interactions and proposed provider training programs to reduce and prevent bias, racism, and discrimination in maternal care settings (B, L, R). Other components of the health inequities theme included legislative support for home visiting models to address SDOH (V) and research and demonstration projects to better understand the distribution and determinants of disparities in maternal care, health risks, and outcomes and assess the effectiveness of interventions to reduce disparities (W, X).

In addition, the health inequities theme addressed models and training to improve maternal and obstetric services in disparately-affected rural and tribal areas (I) and implementation of culturally and linguistically competent models of maternity care (L). Understanding root causes of maternal mortality and morbidity and identifying and eliminating disparities associated with a mother's race, ethnicity, socioeconomic status, and geographic location were outlined in a proposed national biennial plan to reduce maternal mortality and eliminate disparities (Y).

Recent 2021 legislation reinforced racial inequities and SDOH as key focus areas to reduce maternal mortality and related racial and ethnic disparities. Racism was specifically addressed in six bills (A, A2, K, O, Q, S), including training to reduce and prevent bias, racism, and discrimination in maternal care settings (A2) and promoting awareness of racism and gender oppression impacting Black (O) women. Federal legislation addressing other SDOH were proposed in 8 bills (A, A1, A2, A7, A9, O, Q, S), including creation of a SDOH taskforce involving multiple federal agencies to propose strategies to improve conditions of housing, transportation, nutrition, air and water quality, childcare access, and other non-clinical factors to improve maternal health outcomes (A1).

The emphasis on SDOH was facilitated by the introduction and passage of H.R. 959, which packaged individual bills into the proposed Black Maternal Health Momnibus Act of 2021 (A). This legislation, comprising 12 titles (A1–A12), includes policy proposals ranging from support for incarcerated mothers and women veterans (A7, A3*), innovative Medicaid program models (A9), and grants to address SDOH and social support services (A1, A2, A6). One title emphasized diversification of the perinatal workforce with individuals from racially and ethnically diverse backgrounds and training for health care providers on bias, racism, discrimination, and respectful and culturally congruent care (A4). Other provisions of the Momnibus Act addressed maternal morbidity and mortality more broadly by supporting federal maternal health programs for data collection, surveillance, research, and addressing safe and respectful maternity care during the COVID-19 pandemic (A10), promoting maternal vaccination awareness and coverage (A12), and supporting research and grants to mitigate maternal health risks and adverse outcomes associated with climate change (A11). The Protecting Moms Who Served Act (A3) was the only title of the Momnibus Act that became law.§

During the study period, six simple resolutions called attention to the maternal health crisis and emphasized health inequities and SDOH (F, G, O, Q, U). Simple resolutions express the sentiments of a single chamber (i.e., either the House or the Senate) and do not have the force of law. One resolution highlighted historical trauma, gender oppression, discrimination, and other SDOH contributing to high rates of maternal mortality and morbidity among AI/AN and Native Hawaiian women and called for increased federal funding for health services for these populations in rural, tribal, and urban areas (U). Another resolution recognized Black Maternal Health Week (O) which sought to raise national awareness about disparities in maternal mortality and morbidity impacting Black women, amplify voices and organizations by Black women and their families and communities, and enhance community organizing on Black maternal health; it also acknowledged racism and gender oppression as contributing to the disproportionate rates among Black women and called for Congress to address housing, economics, the environment, and other SDOH to improve maternal health outcomes. Other resolutions raised awareness of the maternal health crisis broadly (G), supported "Bump Day" to

^{‡11} of the 12 titles included in H.R. 959 (117th Congress, 2021) were originally introduced as individual bills. §S. 796 (117th Congress, 2021) was enacted into law as the Protecting Moms Who Serve Act (P.L. 117-69). The law is related to Title III of the Black Maternal Health Momnibus Act of 2021.

advocate for maternal health and end preventable maternal deaths (F), and recognized the work and contributions of doulas (M).

Health promotion

The health promotion theme was less common among the bills. Bills with this theme included elements to promote physical, mental, and behavioral health for women before, during, and after pregnancy (N, W), including demonstration projects to enhance primary care, coordination of care, and multidisciplinary support services (N) and improve health and treatment services for pregnant women with substance use and mental health disorders (A2, W, Y). Bills also addressed broader health promotion measures related to maternal vaccinations (A12, G, H) and protection from climate change risks (A11).

Discussion

The current scan of introduced and enacted federal legislation highlights potential opportunities to use federal legislation as a mechanism to advance policy to address maternal mortality. Consistent with previous literature regarding approaches to reduce maternal mortality, there was a significant focus on health care related approaches, with 28 of 37 (76%) pieces of legislation addressing it. Approaches to address health inequities and SDOH were present in 25 of 37 (68%) pieces of legislation. In Figure 3, we have summarized the reviewed federal legislative approaches using an ecological framework³² that highlights approaches at individual, interpersonal, institutional, and societal levels.

Our scan indicates that introduced and enacted federal legislation reflect common approaches identified in clinical and public health literature to reduce pregnancy-related deaths and related racial and ethnic disparities. The significance of enhanced data^{33–35} and quality of care^{10,16,28,36–38} is well-documented in the literature and reflected in the legislation reviewed during the study period. Other policy considerations for reducing maternal mortality suggested in the literature include addressing social and structural determinants of maternal health, ^{13,28,35,39} expanding and extending Medicaid coverage for pregnant and postpartum women, ^{28,35} mandating paid family leave, ²⁸ managing chronic diseases and substance use, ^{35,39} and improving maternity care access in rural areas. ³⁵ Our legislative scan revealed that these approaches have received varying degrees of attention in federal legislation during the study period.

Limitations

This legislative scan represents a snapshot of federal legislation targeting maternal mortality. Our search identified bills with a primary focus on maternal mortality that was clearly indicated in the bill titles or summary. Moreover, most legislation proposed during our study period to address maternal mortality did not proceed beyond the introduction stage; only two pieces of legislation reviewed in our search were enacted into law: Protecting Moms Who Served Act (A3) and Preventing Maternal Deaths Act of 2018 (W). Furthermore, the scan does not represent an exhaustive list of all introduced or enacted federal legislation that could have an impact on reducing maternal mortality. Maternal mortality could have been addressed in other bills, including as part of federal appropriations for various maternal

health programs that are intended to benefit maternal health and reduce pregnancy-related deaths. Our search was restricted to non-appropriations legislation, including resolutions, which contained language to address maternal mortality. This analysis does not include state legislation. Also, we chose broad categories to represent the legislation, although more nuanced categorizations and themes could have been identified.

Opportunities

Findings from our scan indicate some opportunities for further research and policy development to address racial disparities in pregnancy-related deaths. Much of the reviewed federal legislation on reducing racial inequities emphasized implicit bias training for health care providers which addresses inequities at an interpersonal or patient-provider level; the Black Maternal Health Momnibus Act of 2021 (which was not enacted into law) expanded the policy emphasis to addressing health inequities at the institutional and societal levels (Fig. 3). There is room for additional research to inform and support development of legislative policies intended to address broader social factors. A systematic review of 83 studies that examined associations between social determinants and maternal mortality and SMM observed that the majority of studies examined factors such as race and ethnicity, health insurance coverage, and maternal education in relation to maternal health outcomes, whereas only a small proportion of studies investigated broader social factors such as public policy or area-level characteristics. ¹² Future policy and maternal health research can consider filling these identified gaps. ⁴⁰

There is emerging evidence that documents the association of public policies with reduced maternal mortality and SMM. In Florida, each 10% increase in targeted pregnancy-related public health expenditures was associated with a 13.5% decline in the maternal mortality ratio (MMR) among Black women and a 20% reduction in Black-White MMR disparities. Moreover, Medicaid expansion has been associated with a lower MMR in expansion states relative to non-expansion states. Palifornia's paid family leave policy had a suggested association with improved maternal mental health. More research is needed to inform evidence-based public policies that address social determinants of maternal mortality disparities. $^{28,30,42-44}$

This project also demonstrated the value of policy training opportunities for health and public health practitioners. The OMHHE policy academy team developed a working knowledge of the policy process and applied problem identification and policy analysis methods to various projects with CDC and external partners. CDC Policy Academy graduates have contributed policy analysis related to hurricane evacuation laws, ⁴⁵ HIV retesting, ⁴⁶ the health impact of low-income housing tax credits ⁴⁷ and other areas.

Conclusion

Federal legislation may become an important component of overall efforts to improve maternal health, and policy analysis can be a useful skill for public health practitioners to foster monitoring and evaluation of public health policies. The increasing research and legislative emphasis on SDOH may help to inform future policy development and optimize success toward reduction of racial disparities in pregnancy-related deaths.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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References

- GBD 2015 Maternal Mortality Collaborators. Global, regional, and national levels of maternal mortality, 1990–2015: A systematic analysis for the Global Burden of Disease Study 2015. Lancet 2016;388(10053):1775–1812; doi: 10.1016/s0140-6736(16)31470-2. [PubMed: 27733286]
- Gunja MZ, Tikkanen R, Seervai S, Collins SR. What is the Status of Women's Health And Health Care in the U.S. Compared To Ten Other Countries? Available from: https://www.commonwealthfund.org/publications/issue-briefs/2018/dec/womens-health-us-compared-ten-other-countries [Last accessed: October 16, 2020.]
- Centers for Disease Control and Prevention. Pregnancy Mortality Surveillance System. CDC. Available from: https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm [Last accessed: August 26, 2020].
- 4. Joseph KS, Boutin A, Lisonkova S, et al. Maternal mortality in the United States: Recent trends, current status, and future considerations. Obstet Gynecol 2021;137(5):763–771; doi: 10.1097/AOG.00000000004361 [PubMed: 33831914]
- Centers for Disease Control and Prevention. Severe Maternal Morbidity in the United States. CDC. 2020. Available from: https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html [Last accessed: August 13, 2020].
- Creanga AA, Bateman BT, Kuklina EV, Callaghan WM. Racial and ethnic disparities in severe maternal morbidity: a multistate analysis, 2008–2010. Am J Obstet Gynecol 2014;210(5):435.e1–8; doi: 10.1016/j.ajog.2013.11.039.
- 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(35):762–765; doi: 10.15585/mmwr.mm6835a3. [PubMed: 31487273]
- Merkt PT, Kramer MR, Goodman DA, et al. Urban-rural differences in pregnancy-related deaths, United States, 2011–2016. Am J Obstet Gynecol 2021; 225(2):183.e1–183.e16; doi: 10.1016/ j.ajog.2021.02.028.
- 9. Admon LK, Winkelman TNA, Zivin K, Terplan M, Mhyre JM, Dalton VK. Racial and ethnic disparities in the incidence of severe maternal morbidity in the United States, 2012–2015. Obstet Gynecol 2018;132(5):1158–1166. doi: 10.1016/j.ajog.2021.02.028. [PubMed: 30303912]
- 10. Howell EA, Zeitlin J. Quality of care and disparities in obstetrics. Obstet Gynecol Clin North Am 2017;44(1):13–25; doi: 10.1016/j.ogc.2016.10.002 [PubMed: 28160890]
- 11. Kilpatrick SJ, Menard MK, Zahn CM et al. Obstetric Care Consensus No. 9: Levels of maternal care: (replaces obstetric care consensus number 2, February 2015). Am J Obstet Gynecol 2019;221(6):b19–b30; doi: 10.1016/j.ajog.2019.05.046. [PubMed: 31351999]
- 12. Wang E, Glazer KB, Howell EA, Janevic TM. Social determinants of pregnancy-related mortality and morbidity in the United States: A systematic review. Obstet Gynecol 2020;135(4):896–915. doi: 10.1097/AOG.0000000000003762. [PubMed: 32168209]
- Crear-Perry J, Correa-de-Araujo R, Lewis Johnson T, McLemore MR, Neilson E, Wallace M. Social and structural determinants of health inequities in maternal health. J Womens Health (Larchmt) 2021;30(2):230–235; doi: 10.1089/jwh.2020.8882. [PubMed: 33181043]

14. Office of Disease Prevention and Health Promotion, Office of the Assistant Secretary for Health, Office of the Secretary. Healthy People 2030: Social determinants of health. U.S. Department of Health and Human Services. Available from: https://health.gov/healthypeople/objectives-and-data/ social-determinants-health [Last accessed: December 14, 2020].

- 15. Solar O, Irwin A. A Conceptual Framework for Action on the Social Determinants Of Health. World Health Organization. Available from: https://www.who.int/social_determinants/corner/SDHDP2.pdf?ua=1 [Last accessed: July 12, 2021].
- 16. Howell EA, Brown H, Brumley J, et al. Reduction of peripartum racial and ethnic disparities: A conceptual framework and maternal safety consensus bundle. J Midwifery Womens Health 2018;63(3):366–376; doi: 10.1111/jmwh.12756. [PubMed: 29684258]
- 17. Chinn JJ, Martin IK, Redmond N. Health equity among Black women in the United States. J Womens Health (Larchmt) 2021;30(2):212–219; doi: 10.1089/jwh.2020.8868. [PubMed: 33237831]
- Centers for Disease Control and Prevention. Fellowships and Training Opportunities: Public Health Professionals. Available from: https://www.cdc.gov/fellowships/work-experience/health-professionals.html [Last accessed: July 12, 2021].
- Centers for Disease Control and Prevention, Office of the Associate Director for Policy. The CDC Policy Process. Available from: https://www.cdc.gov/policy/polaris/policyprocess/index.html [Last accessed: December 9, 2020].
- 20. Centers for Disease Control and Prevention, Office of the Associate Director for Policy and Strategy. CDC Policy Process: Problem Identification. Available from: https://www.cdc.gov/policy/polaris/policyprocess/problem-identification/index.html [Last accessed: July 12, 2021].
- 21. Howell EA. Reducing disparities in severe maternal morbidity and mortality. Clin Obstet Gynecol. 2018;61(2):387–399; doi: 10.1097/GRF.00000000000349 [PubMed: 29346121]
- Attanasio L, Kozhimannil KB. Patient-reported communication quality and perceived discrimination in maternity care. Med Care 2015;53(10):863–871. doi: 10.1097/ MLR.0000000000000411 [PubMed: 26340663]
- 23. Lu MC. Reducing maternal mortality in the United States. JAMA. 2018;320(12):1237–1238; doi: 10.1001/jama.2018.11652 [PubMed: 30208484]
- 24. Centers for Disease Control and Prevention, Office of the Associate Director for Policy and Strategy. CDC Policy Process: Policy Analysis. Available from: https://www.cdc.gov/policy/ polaris/policyprocess/policyanalysis/index.html [Last accessed: July 12, 2021].
- The Aspen Institute. Reversing the U.S. Maternal Mortality Crisis. Available from: https://www.aspeninstitute.org/wp-content/uploads/2021/04/Maternal-Morality-Report.pdf [Last accessed: July 12, 2021].
- Gingrey JP. Maternal mortality: A US public health crisis. Am J Public Health 2020;110(4):462–464. doi: 10.2105/AJPH.2019.305552 [PubMed: 32159977]
- 27. Bernet P, Gumus G, Vishwasrao S. Maternal mortality and public health programs: Evidence from Florida. Milbank Q 2020;98(1):150–171; doi: 10.1111/1468-0009.12442 [PubMed: 31943403]
- 28. Nichols CR, Cohen AK. Preventing maternal mortality in the United States: Lessons from California and policy recommendations. J Public Health Policy 2021;42(1):127–144; doi: 10.1057/s41271-020-00264-9 [PubMed: 33268845]
- 29. Eliason EL. Adoption of Medicaid expansion is associated with lower maternal mortality. Womens Health Issues. 2020;30(3):147–152; doi: 10.1016/j.whi.2020.01.005 [PubMed: 32111417]
- 30. Aitken Z, Garrett CC, Hewitt B, Keogh L, Hocking JS, Kavanagh AM. The maternal health outcomes of paid maternity leave: A systematic review. Soc Sci Med 2015;130:32–41; doi: 10.1016/j.socscimed.2015.02.001 [PubMed: 25680101]
- 31. Moran PS, Wuytack F, Turner M, et al. Economic burden of maternal morbidity: A systematic review of cost-of-illness studies. PLoS One 2020;15(1):e0227377; doi: 10.1371/journal.pone.0227377 [PubMed: 31945775]
- 32. Noursi S, Saluja B, Richey L. Using the ecological systems theory to understand Black/White disparities in maternal morbidity and mortality in the United States. J Racial Ethn Health Disparities. 2020;8(3):661–669; doi: 10.1371/journal.pone.0227377 [PubMed: 32720294]

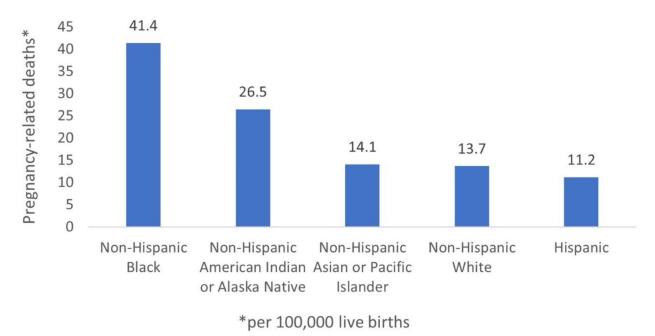
33. MacDorman MF, Declercq E, Thoma ME. Making vital statistics count: Preventing U.S. maternal deaths requires better data. Obstet Gyneco. May 2018;131(5):759–761; doi:10.1097/AOG.000000000002598

- 34. Creanga AA. Maternal mortality in the United States: A review of contemporary data and their limitations. Clin Obstet Gyneco. 2018;61(2):296–306. doi: 10.1097/GRF.000000000000362
- 35. Villavicencio JC, McHugh KW, Edmonds BT. Overview of US maternal mortality policy. Clin Ther 2020;42(3):408–418; doi: 10.1016/j.clinthera.2020.01.015 [PubMed: 32089330]
- 36. Henderson ZT, Ernst K, Simpson KR, et al. The national network of state perinatal quality collaboratives: A growing movement to improve maternal and infant health. J Womens Health (Larchmt) 2018;27(3):221–226. doi:10.1089/jwh.2018.6941 [PubMed: 29634446]
- 37. Wong PC, Kitsantas P. A review of maternal mortality and quality of care in the USA. J Matern Fetal Neonatal Med 2020;33(19):3355–3367; doi: 10.1080/14767058.2019.1571032 [PubMed: 30646778]
- 38. Main EK, Markow C, Gould J. Addressing maternal mortality and morbidity in California through public-private partnerships. Health Aff (Millwood) 2018;37(9):1484–1493; doi: 10.1377/hlthaff.2018.0463 [PubMed: 30179538]
- 39. U.S. Department of Health and Human Services. Healthy Women, Healthy Pregnancies, Healthy Futures: Action Plan to Improve Maternal Health in America. U.S. Department of Health and Human Services. Available from: https://www.hhs.gov/sites/default/files/call-to-action-maternal-health.pdf [Last accessed: December 13, 2020].
- 40. Carvalho K, Kheyfets A, Maleki P, et al. A systematic policy review of Black maternal health-related policies proposed federally and in Massachusetts: 2010–2020. Front Public Healt. 2021;9:664659. doi: 10.3389/fpubh.2021.664659
- 41. Bullinger LR. The effect of paid family leave on infant and parental health in the United States. J Health Eco. 2019;66:101–116; doi: 10.1016/j.jhealeco.2019.05.006
- 42. Koch AR, Geller SE. Addressing maternal deaths due to violence: The Illinois experience. Am J Obstet Gynecol 2017;217(5):556–560. doi: 10.1016/j.ajog.2017.08.005
- 43. ACOG Committee Opinion No. 729: Importance of social determinants of health and cultural awareness in the delivery of reproductive health care. Obstet Gynecol 2018;131(1):e43–e48; doi: 10.1097/aog.000000000002459 [PubMed: 29266079]
- 44. Lu MC, Noursi S. Summary and conclusion: Framing a new research agenda on maternal morbidities and mortality in the United States. J Womens Health (Larchmt). 2021;30(2):280–284. doi: 10.1089/jwh.2020.8877 [PubMed: 33216690]
- 45. Kruger J, Smith MJ, Chen B, et al. Hurricane evacuation laws in eight southern U.S. coastal states December 2018. MMWR Morb Mortal Wkly Rep 2020;69(36):1233–1237; doi: 10.15585/mmwr.mm6936a1 [PubMed: 32914768]
- 46. Lasry A, Kalou MB, Young PR, Rurangirwa J, Parekh B, Behel S. Cost implications of HIV retesting for verification in Africa. PLoS One. 2019;14(7):e0218936; doi: 10.1371/journal.pone.0218936 [PubMed: 31260467]
- 47. Ports KA, Rostad WL, Luo F, Putnam M, Zurick E. The impact of the low-income housing tax credit on children's health and wellbeing in Georgia. Child Youth Serv Rev Oct 2018;93:390–396. doi: 10.1016/j.childyouth.2018.08.012 [PubMed: 30613120]

Fig. 1.

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Pregnancy-related mortality ratio, by race/ethnicity, United States, 2016–2018 Data derived from Pregnancy Mortality Surveillance System (PMSS), Centers for Disease Control and Prevention. Available from: https://www.cdc.gov/reproductivehealth/maternalmortality/pregnancy-mortality-surveillance-system.htm#race-ethnicity [Last accessed:



Fig. 2.
The CDC Policy Process. Reprinted from Centers for Disease Control and Prevention. CDC Policy Process. Available from: https://www.cdc.gov/policy/analysis/process/index.html [Last accessed: August 26, 2022].

Organizational/ Interpersonal

Implicit bias

Respectful

maternity care

competence

training

Cultural

training

Culturally

Supportive

as doulas,

patient

navigators

community

congruent care

providers such

health workers,

Individual

Patient

education

Provider

Health

education

promotion

Health care and health system improvements:

Access to care; telemedicine

Quality of care, maternal safety bundles

Maternal care coordination and medical homes

Diversification of perinatal workforce

Improved and standardized maternal health and death data

Maternal mortality review committees

Health care demonstration programs

Community demonstration

Community/Societal

programs

Medicaid expansion and extension for pregnant and postpartum women

Social determinants of health:

Housing Transportation

Nutritious foods

Childcare access

Air and water quality

Lead exposure

Mental and behavioral

health

Safety net and social support services

Employment

Education

Violence

Racism

Treatment in criminal

justice system

Economic opportunity

Public awareness campaigns

Fig. 3.
Multilevel Approaches in 2017–2021 Federal Legislation to Reduce Pregnancy-related Deaths

Source: Author summary of approaches to address maternal mortality included in U.S. federal legislation during 2017–2021, organized in an ecological framework indicating multiple levels of intervention.

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Table 1.Maternal Mortality Legislation Introduced in the U.S. Congress (2017–2021)

ID	Bill no. ^a	Year ^b	Туре	Title	Focus areas (themes)			
					Health Care related	Enhancing data	Health inequities/ SDOH	Health promotion
A	HR 959 S 346	2021	$\mathrm{Bill}^\mathcal{C}$	Black Maternal Health Momnibus Act of 2021 ^C	X	X	X	X
A1	HR 943 S 851	2021	Bill	Social Determinants for Moms Act^d			X	
A2	HR 1212 S 1042	2021	Bill	Kira Johnson Act d	X		X	X
A3	Pub L 117-69 S 796 HR 958	2021	Law	Protecting Moms Who Served Act^d	X		X	
A4	HR 945 S 287	2021	Bill	Perinatal Workforce Act^d	X			
A5	HR 925 S 347	2021	Bill	Data to Save Moms Act^d		X		
A6	HR 909 S 484	2021	Bill	Moms MATTER Act^d	X		X	
A7	HR 948 S 341	2021	Bill	Justice for Incarcerated Moms Act of 2021 ^d	X		X	
A8	HR 937 S 893	2/2021	Bill	Tech to Save Moms Act^d	X			
A9	HR 950 S 334	2021	Bill	IMPACT to Save Moms Act^d	X		X	
A10	HR 959 (Title X) ^e	2021	Bill	Maternal health pandemic response e	X	X		
A11	HR 957 S 423	2021	Bill	Protecting Moms and Babies Against Climate Change Act^d	X		X	X
A12	HR 951 S 345	2021	Bill	Maternal Vaccinations Act ^d			X	X
В	S 1234 HR 2556	2021	Bill	Maternal CARE Act	X		X	
C	HR 3126 S 3239	2021	Bill	Healthy MOM Act	X			
D	S 1622	2021	Bill	HEALTH for MOM Act of 2021	X			
E	HR 4916 S 2588	2021	Bill	Protect Moms From Domestic Violence Act			X	
F	H Res 545	2021	Res	Supporting the ideals of Bump Day	X		X	
G	H Res 539	2021	Res	Recognizing the maternal health crisis in the United States	X	X	X	X
Н	HR 4387 S 1675	2021	Bill	Maternal Health Quality Improvement Act of 2021	X		X	X
I	HR 769 S 1491	2021	Bill	Rural MOMS Act	X	X	X	
J	HR 3688 S 1333	2021	Bill	MOMS Act	X	X		
K	S 1804	2021	Bill	Mothers and Newborns Success Act	X	X	X	

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Focus areas (themes) Health Health **Enhancing** Care inequities/ Health Year^b ID Bill no.a Type Title related data SDOH promotion X L HR 3407 2021 Bill MOMMA's Act X S 411 M (a) H Res 395 2021 Recognizing the work and Res (b) S Res 209 2021 contributions of doulas ... N HR 3063 S 1542 2021 Bill MOMMIES Act X X O (a) H Res 304 2021 Black Maternal Health Week X Res (b) S Res 153 2021 (April 11-17) P HR 1350 2021 Bill Supporting Best Practices for X X S 408 Healthy Moms Act Q S Res 14 2021 Res Maternal Health Awareness Day X X R 2020 X X Bill Maternal Health Quality X HR 4995f Improvement Act of 2020^f HR 4215 S 2586 HR 4243 S 2373 S HR 6533 2020 Bill Defeat Infant and Maternal X X Mortality Act T S 3443 2020 Bill Improving Care and Coverage for X HR 2751 Mothers Act Mamas First Act U H Res 846 2020 Res Recognizing the maternal health X crisis among indigenous women in the United States .. V HR 4768 2019 Bill Home Visiting to Reduce X Maternal Mortality and Morbidity W Pub L 115-344 2018 X X X X Preventing Maternal Deaths Act Law H 1318 of 2018 S 1112

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See Supplemental Table (S1) for reference information related to the bills listed in Table 1.

Bill

Bill

2018

2018

HR 5942

S 3660

HR 5761

X

Y

Health Equity and Accountability

Ending Maternal Mortality Act of

X

X

X

X

X

X

X

^aRelated bills and laws are grouped together.

 $^{^{}b}$ Year is the latest introduction or action on the bill or resolution during the search period.

^CThe Black Maternal Health Momnibus Act of 2021 was incorporated into the Build Back Better Act (H.R. 5376, Subtitle J, Part 4. Maternal Mortality) which passed the House on 11/19/21.

^d These bills were originally introduced as individual bills and later included in HR 959, 117th Congress (2021), the bill that proposed the Black Maternal Health Momnibus Act of 2021.

^eTitle X of H.R. 959, Maternal Health Pandemic Response, was not a separate bill.

The Maternal Health Quality Improvement Act of 2020 was passed by the House on 9/21/20. This bill includes the proposed Excellence in Maternal Healthcare Act of 2019 (HR 4215), Maternal Outcomes Matter Act of 2019 "MOM Act" (S 2586), and Rural Maternal and Obstetric Modernization of Services Act "Rural MOMS Act" (HR 4243/S 2373). HR, House of Representatives; H Res; Pub L, Public Law; Res, Resolution; House Resolution; S, Senate; SDOH, social determinants of health; S Res, Senate Resolution.