

Maternal Morbidity and Mortality

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MATERNAL HEALTH REFERS to the health of women during the pre-pregnancy, pregnancy, and postpartum periods. A series of important events and changes—physical, emotional, and social—occur before, during, and well after the 40 weeks of gestation and the first year after childbirth. These changes, although natural, can be stressful, and they have health consequences across a woman's life course.

Maternal health is a key priority for the U.S. Department of Health and Human Services (HHS). The HHS Office on Women's Health (OWH) is charged with providing expert advice and consultation to the secretary on scientific, legal, ethical, and policy issues, and serving as a coordination point throughout HHS on issues affecting the health of women and girls. OWH establishes short- and long-term goals within HHS for research, disease prevention and health promotion, service delivery, and education for public health and health care professionals surrounding women's and girls' health. OWH identifies needs and monitors activities within HHS that contribute to women's and girls' health and through leadership of the Coordinating Committee on Women's Health. In addition, OWH is responsible for facilitating the exchange of information through the National Women's Health Information Center and promoting women's and girls' health programs and policies, all aimed at improving the health of women and girls.

The National Institutes of Health (NIH), the nation's foremost medical research agency, encourages scientists to study pregnancy as part of the life course. NIH's Office of the Director established the Office of Research on Women's Health (ORWH) in 1990 specifically to promote women's health research within and beyond the NIH scientific community. ORWH has as its mission to enhance research related to diseases, disorders, and conditions affecting women; help ensure that NIH-supported biomedical research and clinical trials adequately address issues regarding women's health and that women are appropriately represented; and improve the advancement of women in biomedical careers. ORWH also is responsible for coordinating trans-NIH initiatives and

identifying scientific opportunities to advance research on the health of women. One of the areas identified has been maternal morbidity and mortality.

The *Eunice Kennedy Shriver National Institute on Child Health and Human Development* (NICHD) strives to lead research and training to understand human development, improve reproductive health, enhance the lives of children and adolescents, and optimize abilities for all. The *NICHD Strategic Plan 2020* details five scientific research themes: (i) understanding the molecular, cellular, and structural basis of development; (ii) promoting gynecological, andrologic, and reproductive health; (iii) setting the foundation for healthy pregnancies and lifelong wellness; (iv) improving child and adolescent health and the transition to adulthood; and (v) advancing safe and effective therapeutics and devices for pregnant and lactating women, children, and people with disabilities. With the strategic plan as its guide, NICHD aspires to fulfill its vision of "Healthy pregnancies. Healthy children. Healthy and optimal lives." The NICHD leads the NIH in funding of research on maternal health, which complements and enhances ORWH's mission to support and strengthen research on women's health.

Women who live in the United States are more likely to die from pregnancy, or childbirth-related complications than women in peer nations.¹ Rates of maternal morbidity and mortality, particularly among African American, American Indian, and Alaska Native women,² continue to rise in the United States.³ Maternity care is inaccessible or unavailable in many rural and urban settings. Research addressing disparities has correlated site of delivery to outcomes in New York City.⁴ In addition, across the country, innovative programs are addressing disparities, such as a text-message remote-monitoring initiative in Philadelphia that is reducing disparities in hypertension during pregnancy and the postpartum period.⁵

To bring attention to and address these issues, on May 15, 2019, ORWH convened the Fourth Annual NIH Vivian W. Pinn Symposium: "Improving Maternal Health: Behind the

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Numbers.” The Vivian W. Pinn symposium followed the February 2019 release of *Advancing Science for the Health of Women: The Trans-NIH Strategic Plan for Women’s Health Research, 2019–2023*. The strategic plan effort was coordinated by ORWH in collaboration with all NIH Institutes, Centers, and Offices and with input from external stakeholders. The plan’s three guiding principles are to consider the complex interaction among internal and external factors that influence a woman’s life, include different populations of women in research, and engage diverse perspectives in biomedical research.

NIH’s approach to advancing research on the health of women is interdisciplinary—leveraging knowledge and discoveries from multiple fields to drive biomedical breakthroughs and enhance health care tailored to individual women of all ages and backgrounds—and this interdisciplinary approach is central to the strategic plan. The plan’s five strategic goals are to (i) advance rigorous research that is relevant to the health of women; (ii) develop methods and leverage data sources to consider sex and gender influences that enhance research for the health of women; (iii) enhance dissemination and implementation of evidence to improve the health of women; (iv) promote training and careers to develop a well-trained, diverse, and robust workforce to advance science for the health of women; and (v) improve evaluation of research that is relevant to the health of women.

We are pleased to present this special issue of the *Journal of Women’s Health* featuring articles on the topics that were covered during the “Improving Maternal Health: Behind the Numbers” symposium. The symposium’s presentations, given by leading clinicians and researchers, focused on the lasting medical complications that can result from pregnancy, as well as U.S. maternal morbidity and mortality rates. Speakers reviewed current statistics and health services research and provided an overview of relevant federal programs. They also discussed new approaches to improving women’s health before, during, and after pregnancy, as well as throughout a woman’s lifespan.

This special issue brings together a broad range of research topics and perspectives on maternal morbidity and mortality. The articles included provide a comprehensive review of the relevant literature and serve as an important resource as we search for ways to improve outcomes in maternal health. Topics span epidemiological patterns and trends, biological and physiological risk factors, external risk factors, social determinants of health, and proven and potential interventions that are poised to be delivered to a broader audience. We hope that the content will be of interest to a wide variety of readers, including researchers, clinicians, and women who are or have been affected by these topics.

As additional resources, we invite you to review resources offered by the HHS OWH at www.womenshealth.gov. The ORWH’s web portal provides a centralized location for NIH maternal morbidity and mortality resources. The portal provides access to information on maternal health, pregnancy complications, chronic conditions, and pregnancy loss; ongoing studies and publications; NIH funding opportunities; upcoming events; and additional resources of interest to the public. We invite you to visit the portal at orwh.od.nih.gov/research/maternal-morbidity-and-mortality. NICHD also offers a wealth of information on maternal morbidity and mortality, including research opportunities and resources, at www.nichd.nih.gov/health/topics/maternal-morbidity-mortality.

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