NIH Pathways to Prevention (P2P) Program
October 23 and 25, 2023

A Report from the Federal Partners Meeting of the NIH P2P Workshop:

Identifying Risks and Interventions to Optimize Postpartum Health

National Institutes of Health
Office of Disease Prevention

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Sponsored by:
National Institutes of Health
Office of Disease Prevention
Office of Research on Women's Health
National Heart, Lung, and Blood Institute
Eunice Kennedy Shriver National Institute of Child Health and Human Development
National Institute on Minority Health and Health Disparities

Introduction

The Pathways to Prevention (P2P) program of the National Institutes of Health (NIH) Office of Disease Prevention (ODP) uses a structured process to identify research gaps in a scientific area of broad public health importance. The goals of the P2P process are to synthesize and interpret the current evidence, shape a research agenda, and develop an action plan for addressing key gaps. From November 29 to December 1, 2022, NIH convened the P2P Workshop titled Identifying Risks and Interventions to Optimize Postpartum Health. See Background below. This workshop was co-sponsored by NIH ODP, Office of Research on Women's Health (ORWH), National Heart, Lung, and Blood Institute (NHLBI), the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), and National Institute on Minority Health and Health Disparities (NIMHD). An independent panel attended the workshop, which included presentations of a systematic review and presentations from experts. The independent panel made recommendations for moving the field forward as outlined in the independent panel report published in *Obstetrics and Gynecology*. A link to this report as well as other reports generated from this workshop may be found on the workshop webpage.

On October 23 and 25, 2023, ODP convened a meeting with representatives from federal government agencies (the Federal Partners) to identify strategies to address the recommendations in the independent panel report (see Appendix A for the list of attendees). This document summarizes the discussions and action items identified at the Federal Partners Meeting.

Background

The United States is experiencing a growing maternal health crisis. According to the Centers for Disease Control and Prevention (CDC), 1,205 women died in 2021 from conditions related to pregnancy. Another 50,000 women experienced severe pregnancy-related complications—like heart disease, stroke, blood clots, and depression—that may affect their health for the rest of their lives. Many of these adverse events are preventable and disproportionately impact Black or African American women and American Indian (AI) and Alaska Native (AN) women.

Maternal health research efforts have generally focused on pregnancy. However, the first year after the end of pregnancy, also referred to as the first year of the postpartum period, are especially vulnerable times for people who give birth. The majority of pregnancy-related deaths (from all causes, including health conditions and violence) and severe pregnancy-related complications occur during the postpartum period. To make evidence-based improvements, the research community must increase efforts to:

- Identify risk factors that contribute to poor postpartum outcomes at multiple levels—from the individual to the health system and community
- Address how a person's risk of poor postpartum outcomes is affected by social determinants of health (the conditions of where they live, learn, work, and play)
- Characterize the impact of those risk factors on maternal morbidity and mortality
- Develop approaches to reduce or prevent these risks

Workshop Key Questions

To address complex issues related to postpartum health, ODP, ORWH, NHLBI, NICHD, and NIMHD co-sponsored the P2P Workshop titled *Identifying Risks and Interventions to Optimize Postpartum Health*. The following questions on critical time points framed the workshop:

1) At a **birthing person's entry into prenatal care**, what combinations of risk indicators have the greatest effect on (i.e., are the most significant predictors of) poor postpartum health outcomes?

    a. To what extent do these patterns of predictors of poor postpartum health outcomes vary by the race/ethnicity of the birthing person?

2) **Immediately before or immediately after delivery and before release from birthing-related care**, what combinations of risk indicators to the birthing person have the greatest effect on (i.e., are the most significant predictors of) poor postpartum health outcomes?

    a. To what extent do these patterns of predictors of poor postpartum health outcomes vary by the race/ethnicity of the birthing person?

Systematic Evidence Review

A systematic evidence review of the scientific literature, guided by the criteria time points and key questions, was conducted by the University of Minnesota's Evidence-based Practice Center, through a contract with the Agency for Healthcare Research and Quality (AHRQ) and was published in *Obstetrics and Gynecology*. The purpose of the systematic evidence review was to inform the P2P workshop by summarizing existing research on the social (including structural) risk factors associated with maternal morbidity and mortality in the United States during the prenatal and postpartum periods. The following key points emerged from the review:

- Risk factors of interest for both pregnant and birthing people broadly aligned with social determinants of health (SDOH). These identified risk factors represent only a subset of the issues that may affect maternal morbidity and mortality.
- Limited depth and quality of available research within each SDOH domain impeded the ability to understand the mechanisms by which SDOH (including racism, discrimination, and bias) affect maternal health.
- An unexpectedly large volume of research was found on violence and trauma relative to other potential SDOH.
- Among outcome domains, depression and other mental health outcomes represented a large proportion of the health outcomes.
- Research focused on the impact of SDOH on maternal health is needed to inform prevention and intervention, which moves beyond disciplinary silos and includes mechanisms and pathways by which SDOH impact pregnant and birthing people.
- Organized and curated catalogues of maternal health exposures (risk factors) and their presumed mechanisms could facilitate the design of future studies (e.g., name the form of racism examined, mechanisms by which it may work, and intersecting factors that may compound its effect).

Limitations

The methods selected for this systematic evidence review provided a detailed map of the research connecting racism and other SDOH to maternal health and morbidity for observed pregnancies. The reviewers purposefully focused on interpersonal or relational factors to capture literature most likely to address this intersection. Such high-level mapping will help researchers—who are often still siloed in particular areas of expertise or interest—to gain a wider perspective on the breadth of literature within which their specific practice and advocacy resides. Because the reviewers required studies to examine the impact of an SDOH risk factor on maternal health outcomes to be included, many studies were excluded that examined only comorbidities or other medical risk factors. Most of these excluded studies used patient demographics as control or confounder variables and lacked description of exposures indicative of SDOH. The evidence map also did not consider how specific medical conditions were impacted by SDOH.

Independent Panel Report
A unique feature of every P2P workshop is the involvement of a multidisciplinary, independent panel comprised of nonfederal representatives who have attested that they hold no scientific or personal conflicts with the subject matter of the P2P workshop for which they have volunteered their service. Independent panel members were vetted for potential conflicts of interest. The independent panel was charged with writing the independent panel report that (1) summarized the key findings and research needs outlined in the systematic evidence review and discussed at the workshop; and (2) provided a set of recommendations to move the field forward. The independent panel report includes five overall recommendations for the field (see Appendix B).

Federal Partners Meeting
Representatives from the co-sponsoring NIH Institutes, Centers, and Offices (ICOs) indicated their interest in bridging across federal agencies, sharing information, and discussing ways of addressing the recommendations of the independent panel. ODP convened an idea-generating meeting on October 23 and 25, 2023, including 87 representatives from 13 NIH ICOs, 16 other federal agencies, and the Office of the Vice President. The objectives of the Federal Partners Meeting were to (1) review and discuss the findings and recommendations outlined in the independent panel report; (2) discuss current and future federal activities relevant to the topic; (3) identify opportunities for federal agency collaboration and actionable items; and (4) discuss next steps for developing a federal action plan to move the field forward.

1. **Perspectives and Discussion of Independent Panel Report Findings and Recommendations**

1a. NIH Perspectives

Presenters from the co-sponsoring ICOs reviewed the findings from the systematic evidence review and stated that there is a need for improving the quality of both research and reporting standards. Related initiatives underway include the following.

Implementing a Maternal health and PRegnancy Outcomes Vision for Everyone (IMPROVE) Initiative, led by NICHD, ORWH, and the National Institute of Nursing Research (NINR) and coordinated by the NIH Coordinating Committee for Maternal Morbidity and Mortality (CCM3), is an NIH-wide effort to support research to reduce preventable causes of maternal deaths and improve health for women before, during, and after delivery with a special emphasis on health disparities and populations that are disproportionately affected.

- **Maternal Health Research Centers of Excellence**, administered by NICHD as part of the IMPROVE Initiative, support data collection, coordination, and innovative approaches.
- **Community Implementation Program (IMPROVE-CIP)**, led by NHLBI with IMPROVE funding from NICHD, supports dissemination and implementation research on innovative approaches built on evidence-based findings from foundational research on factors that ultimately contribute to reducing maternal mortality.

- **Rapid Acceleration of Diagnostics Technology (RADx® Tech) for Maternal Health Challenge**, led by NICHD as a part of the IMPROVE Initiative, is a prize competition to accelerate development of remote and point-of-care technologies for assessment and care delivery that may improve access to and delivery of postpartum care.
- **Connecting the Community for Maternal Health Challenge**, led by NICHD and ORWH as a part of the IMPROVE Initiative, is a prize competition to encourage community-based and advocacy organizations in the United States to develop the infrastructure and capabilities necessary to conduct maternal health research covering the full perinatal period.

Maternal-Fetal Medicine Units (MFMU) Network, established by NICHD, aims to reduce maternal, fetal, and infant morbidity related to preterm birth, fetal growth anomalies, and maternal complications as well as provide the rationale for evidence-based, cost-effective obstetric practice by supporting well-designed clinical trials in maternal-fetal medicine and obstetrics, particularly with respect to preterm birth.

NICHD National Advisory Child Health and Human Development (NACHHD) Council's Pregnant Women and Lactating Women Implementation Working Group monitors and reports on the implementation of recommendations for improving knowledge and research on safe and effective therapeutics for pregnant and lactating people.

NICHD National Child & Maternal Health Education Program identifies key challenges in child and maternal health, reviews relevant research, and initiates educational activities that advance the field, and improve the health of women and children.

Maternal and Pediatric Precision in Therapeutics (MPRINT) Hub, sponsored by NICHD, serves as a national resource to aggregate, present, and expand the available knowledge, tools, and expertise in maternal and pediatric therapeutics to the broader research, regulatory science, and drug development communities. It also conducts therapeutics-focused research in obstetrics, lactation, and pediatrics while enhancing inclusion of people with disabilities.

NIH Community Engagement Alliance (CEAL), led by NHLBI and NIMHD and supported by the **Network for Community-Engaged Primary Care Research (NCPCR**), creates programs that support community-based partnerships to focus upon addressing SDOH and improving health equity.

Women's Health Research in Institutional Development Award (IDeA) Programs, led by ORWH and housed in the National Institute of General Medical Sciences, are congressionally mandated programs that build research capacity in states that historically have low levels of NIH funding by supporting competitive basic, clinical, and translational research, faculty development, and infrastructure improvements. IDeA programs include two initiatives to advance research on women's health and maternal health, and increase research capacity in these areas in IDeA States:

- **Administrative Supplements for Research on Women's Health in the IDeA States**
- **Supporting Women's Health Research in IDeA States through the Centers of Biomedical Research Excellence (COBRE) Phase 1 Program**

Building Interdisciplinary Research Careers in Women's Health (BIRCWH), created by ORWH in partnership with ICOs, is a mentored career-development program designed to connect junior faculty to senior faculty with shared interest in women's health and sex differences research.

Early Intervention to Promote Cardiovascular Health of Mothers and Children (ENRICH), led by NHLBI, NIMHD, ORWH, Health Resources and Services Administration (HRSA), and the Administration for Children and Families, supports research to test the effectiveness of interventions designed to promote cardiovascular health (CVH) and address CVH disparities in both mothers and children of low socio-economic status, who live in low-resource rural or urban communities, or who are in diverse geographic regions of the United States with high burden of cardiovascular disease risk factors.

Presenters stated that the information shared and the action steps developed during this meeting will be used to enhance these ongoing initiatives.

1b. Perspectives from the Office of the Vice President

The Office of the Vice President of the United States shared the President and Vice President's commitment to addressing the maternal health crisis and highlighted the following actions.

Black Maternal Health Momnibus Act includes 13 individual bills that make critical investments in SDOH that influence maternal health outcomes such as housing, transportation, and nutrition; extends Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) eligibility in the postpartum and breastfeeding periods; provides funding to a variety of programs including community-based programs and maternal vaccination; supports workforce development; improves data collection; and promotes innovative payment models.

Surgeon General's Call to Action to Improve Maternal Health, issued in December 2021, called for federal agencies, businesses, and non-profits to collaboratively solve the maternal health crisis; and secured substantial public and private investments to support a number of initiatives on a range of activities, including the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program, the State Maternal Health Innovation and Implementation Program, and others listed below.

White House Blueprint for Addressing the Maternal Health Crisis lays out five goals and specific actions that the federal government will take to improve maternal health. The blueprint received over 50 commitments from nine federal agencies for sustained multiyear efforts to address drivers of health. Examples of work under each goal included:

- **Goal 1:** Increase access to and coverage of comprehensive high-quality maternal health services including behavioral health services.
    - Permanent state option for postpartum Medicaid extension
    - National Maternal Mental Health Hotline (1-833-TLC-MAMA)
    - Perinatal Quality Collaboratives expansion
    - Indian Health Service (IHS) Obstetric Readiness in Hospitals
- **Goal 2:** Ensure those giving birth are heard and are decisionmakers in accountable systems of care.
    - State Maternal Health Innovation (MHI) Program
    - Centers for Medicare and Medicaid Services (CMS) Birthing-Friendly Hospital Designation
    - CDC Hear Her Campaign
- **Goal 3:** Advance data collection, standardization, harmonization, transparency, and research.
    - Maternal Mortality Review Committees expanded to all states
    - NIH P2P program workshop on postpartum health
    - Office of the National Coordinator for Health Information Technology (ONC) projects to increase data exchange and data access for women
- **Goal 4:** Expand and diversify the perinatal workforce.
    - Healthy Start Supplement funding opportunity for Community-Based Doulas
    - Nurse Corps Loan Repayment Program
    - Community Health Worker training and reauthorization; MIECHV Program expansion
- **Goal 5:** Strengthen economic and social supports before, during, and after pregnancy.
    - WIC modernization
    - Provider training programs on intimate partner violence during the pregnancy and postpartum periods
    - Workplace support and protections (Providing Urgent Maternal Protections for Nursing Mothers Act and Pregnant Workers Fairness Act)

1c. Federal Partners Perspectives

HRSA's Maternal and Child Health Bureau has a paradigm to accelerate the pace of change, promote prevention and a life course approach, and collaborate to improve maternal health. Potential gaps in addressing postpartum health include insurance coverage in the postpartum period, uptake of postpartum visits within the appropriate time periods after birth, and access

to mental health resources during and after pregnancy. Examples of HRSA maternal health programs for promoting access include:

- Healthy Start
- MIECHV Program
- National Maternal Mental Health Hotline
- State MHI Program

HRSA programming related to improving the quality of maternal health care includes:

- Integrated Maternal Health Services
- Rural Maternity and Obstetrics Management Strategies (RMOMS) Program

HRSA's maternal health programs to strengthen the workforce include:

- Healthy Start Supplement: Community-Based Doulas
- Maternal Health Research Collaborative for Minority Serving Institutions (MH-RC-MSI) Coordinating Center (CC)
- Screening and Treatment for Maternal Mental Health and Substance Use Disorders

HRSA is also focusing its efforts on teenagers and how they may engage in the National Maternal Mental Health Hotline text functioning. Many teens use hotline services and there is a need to tailor programs to different age groups and identify social/structural drivers targeting that group.

HRSA also supported the creation of an interactive online mapping tool for exploring the geographic relationships between maternal and infant health indicators, health resources, and demographics. The tool helps federal, state, and local decision-makers and others visualize maternal and infant health factors to assist in understanding need and targeting resources.

CMS created the Maternity Care Action Plan aimed at advancing maternal health equity. The plan looks at all CMS programs to address gaps in maternity care such as the lack of continuity of coverage from preconception through postpartum; access to care; lack of data stratified by race, ethnicity, geographic region, and other demographic factors to identify disparities in care and outcomes; the lack of consensus on high-quality care; and the implementation of evidence-based practices. The presenter shared that:

- The American Rescue Plan Act of 2021 allows states to provide continuous Medicaid and Children's Health Insurance Program (CHIP) coverage for a full year after pregnancy.
    - A Postpartum Coverage Tracker Map, based on Kaiser Family Foundation analysis of state policies shows that 41 states including Washington, D.C. have implemented the 12-month extension.
- CMS' Hospital Inpatient Quality Reporting Program reduces payments to hospitals that fail to meet program requirements such as reporting on participation in a maternity care quality collaborative or implementing best practices for improved maternity care.

    - CMS added two maternal health quality measures to capture severe obstetric complications and cesarean section rates.
- CMS launched the Maternal and Infant Health Initiative and is working with states to improve maternal and infant health policies and implement best practices.
- CMS created a Birthing-Friendly Hospital Designation for awarding hospitals committed to improving maternal health outcomes such as implementing evidence-based interventions that may mitigate adverse impacts of bias/discrimination on outcomes.
- CMS created Preliminary Adult and Pediatric Universal Foundation Measures to increase alignment across CMS quality programs and promote equitable care.

Examples from the CDC's Division of Reproductive Health National Center for Chronic Disease Prevention and Health Promotion that provide essential data related to maternity health include:

- Maternal Mortality Review Committees, convened at the state or local level, comprehensively review deaths that occur during or within a year of pregnancy and work with the CDC to prevent future deaths.
- Pregnancy Risk Assessment Monitoring System collects jurisdiction-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy. The system captures data on 81% of all live births in the United States.
- Perinatal Quality Collaboratives are state or multistate networks of teams working to improve the quality of care for mothers and babies.

While the Maternal Mortality Review Committees provide data such as the timing of pregnancy-related deaths and the leading underlying causes of death, these data sources also provide examples of factors that contribute to maternal mortality. Additionally, the Pregnancy Risk Assessment Monitoring System collects self-reported maternal behaviors and experiences on a wide range of topics including preconception care, oral health, pregnancy intention, prenatal care, health insurance, cigarette and alcohol use, intimate partner violence, postpartum contraception, mental health, breastfeeding, and infant sleep environment.

Additionally, CDC, in partnership with the National Association of Community Health Centers, is working to build capacity in Federally Qualified Health Centers to improve the delivery of quality postpartum care for health center patients. Efforts include integrating evidence-based recommendations into the clinic workflow and using health information technology systems to improve data standardization and quality in the electronic health record workflow to improve care.

The presenter from the IHS Office of Clinical and Preventive Services shared background on maternal health for AI/AN individuals including:

- Most pregnancy-related AI/AN deaths (93%) were determined to be preventable and the majority of deaths (64%) occurred postpartum (CDC, 2022).
- In 2020, 12.8% of AI/AN individuals who gave birth lived in maternity care deserts.
- About one-quarter of AI/AN women (24.2%) did not receive adequate prenatal care and 26.7% of AI/AN babies were born in areas of limited or no access to maternity care (March of Dimes, 2022).[1]

Examples of high-level activities include:

- **Obstetric Readiness in the Emergency Departments** focuses on ensuring that sites in maternity care deserts without obstetric services have the tools and support to safely triage, stabilize, and transfer pregnant and postpartum patients and newborns in the emergency setting.
- **Maternity Care Coordinators program** improves access to culturally-specific care coordination in the community for AI/AN pregnant and postpartum persons and helps to manage complex conditions and track pathways to understand outcomes.
- **Self-Monitoring Blood Pressure program** evaluates the accuracy and clinical utility of self-monitoring blood pressure mechanisms at home during pregnancy and the postpartum period.

2. Current and Future Federal Activities Relevant to the Topic

Presenters from co-sponsoring ICOs facilitated discussions for each set of independent panel recommendations. The section below captures the discussions and related resources shared by Federal Partners in the order that they were discussed at the meeting (e.g., Recommendation 1 was discussed last).

[1] Indigenous people are often misclassified leading to underestimation of Indigenous-specific mortality and health metrics. See https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10748801/.

2a. Discussion Session 1 – Independent Panel Recommendation 2

Employ a comprehensive, multilevel life course conceptual framework in policy, research, and clinical transformations to improve maternal health at all ages.
Embrace a life course perspective to examine the long-lasting impacts of trauma, structural racism, poverty, and other SDOH at societal, community, and interpersonal and individual levels.
Apply a "disparities lens" to studies—always examining not only population averages but also how indicators vary over time across more and less socially advantaged groups of people.
Incorporate contextual factors that address the multilevel life course model, particularly for those who experience the greatest disparities.
Integrate support and services that are tailored to individuals' needs and visualize reproductive health trajectories, developmental effects of early childhood experiences, and the cumulative impacts of chronic stressors.
Explore the intersection of multiple risk factors on clinical outcomes, especially the intersection of downstream biological risk factors with upstream SDOH.

Federal Partners acknowledged the progress in collecting usable data related to maternal morbidity and mortality over the past five years and that this data supports the need for a life course approach and disparities lens to further work in maternal morbidity and mortality. More research is needed for socially disadvantaged groups such as LGBTQI+ populations, people in the carceral system, and people experiencing homelessness. They discussed logistical barriers (such as housing and transportation) and emphasized the need to use interviewers trained in trauma and equity and build trust for accurate data collection. Federal Partners also emphasized the need for the inclusion of diverse perspectives to ensure the right questions are asked. The group discussed issues related to disaggregating the data to better understand and examine disparities. Concerns were raised on whether race was accurately reported as well as state-to-state variability in reporting race and whether information is lost during data disaggregation; all factors that pose challenges in assessing SDOH. Discussion also suggested that different populations (such as Hispanic/Latino/a) may be used as reference groups in addition to using White as the default comparison group.

The Federal Partners discussed real-world implications of federal and state partnerships. They acknowledged that federal agencies may require two to three years before funding is made available and more immediate action is often required within states where implementation occurs.

Lessons learned from federal action to address the opioid epidemic were discussed. Federal Partners stated that it is critical to have cross-agency collaboration representing multiple perspectives. Other lessons included the importance of forming champions within each state and success with gathering state representatives at national meetings for cross-learning and networking. Federal Partners also stated that many lessons were learned from data

collaboratives related to implementing evidence-based practices, working with communities to develop data dashboards, and empowering action with data driven decision-making.

Federal Partners discussed how to incorporate a life course approach including accessing data across systems to understand ways to mitigate maternal morbidity and mortality. They raised questions to understand approaches for postpartum assessment of maternal health, capturing handoffs between systems such as obstetrics and primary care, and processes for sharing information relevant for ongoing patient care. Barriers to care coordination were raised such as birthing persons rejecting depression or other screening for fear that results may trigger a review from Child Protective Services, difficulties in sharing medical records across systems, and lack of reimbursement for screening or insurance limits for follow-up care.

Federal Partners also discussed workforce development efforts underway to relieve the overwhelmed primary care system, which faces difficulties accommodating pregnant and postpartum individuals as a result of their primary focus on individuals with acute medical conditions. They discussed the need for incentives to enter the workforce; ongoing engagement of primary care physicians through the birthing process; and the use of community health workers, peer educators, physician extenders, physician assistants/associates, and patient navigators similar to work underway with cancer treatment. HRSA, Substance Abuse and Mental Health Services Administration (SAMHSA), and others shared examples of programs to diversify the workforce. For example, HRSA supports pipeline programs for nurses and education subsidization for advanced nursing practitioner and other nursing degrees, and service delivery in underserved health shortage areas.

Federal Partners described the following current and future efforts underway related to recommendations for a conceptual framework:

- HRSA programs such as the MIECHV and Healthy Start implement a life course approach.
- NIMHD Research Framework reflects an evolving conceptualization of factors relevant to understanding and promoting minority health as well as understanding and reducing health disparities.
- CMS Strong Start initiative aims to improve the quality of prenatal care for Medicaid recipients by providing additional services, reducing costs during pregnancy, birth, and the infant's first year of life, and sharing lessons learned on Group Prenatal Care and the prevalence of depression among pregnant Medicaid recipients.
- National Academies of Science, Engineering, and Medicine (NASEM) Committee on the Use of Race and Ethnicity in Biomedical Research held a public meeting to share the statement of their task on October 24, 2023.
- Department of Health and Human Services (HHS) Office of Women's Health and CMS launched the HHS Racial Equity in Postpartum Care Challenge to improve equity in

postpartum care for African American and AI/AN women enrolled in Medicaid or the CHIP.

- Office of the Assistant Secretary for Planning and Evaluation (ASPE) shared a guide on Advancing Equity by Incorporating Intersectionality in Research and Analysis and other equity resources.
- Department of Labor (DOL) shares resources on employment issues related to pregnancy, birth, and nursing as well as equity strategies.
- SAMHSA Notice of Funding Opportunity on State Pilot Program for Treatment for Pregnant and Postpartum Women aims to support services for pregnant and postpartum women with a primary diagnosis of a substance use disorder, emphasizing the treatment of opioid use disorders.
- NIH HEALthy Brain and Child Development Study is supporting research to better understand brain development (beginning in the perinatal period and extending through early childhood) including variability in development and how it contributes to cognitive, behavioral, social, and emotional function.
- SAMHSA issued a Disparity Impact Statement Guidance and requires all grant recipients to prepare a statement as part of a data-driven, quality improvement approach to advance equity.

2b. Discussion Session 2 – Independent Panel Recommendation 3

Strengthen the research methods and approaches used within the science of maternal health. Future funding opportunities and funded studies should seek to:
Improve techniques and methods that estimate causal impacts of structural and systemic racism.
Develop/create standardized reporting measures/metrics of maternal health exposures and outcomes that could enhance greater synthesis of research findings.
Promote greater inclusion of pregnant and postpartum/lactating women in research studies.
Create robust datasets designed to capture the impact of systemic racism and SDOH and their intersections with medical risk factors.
Encourage the use of broad clinical networks and larger samples in studying peripartum health to include participants from diverse backgrounds and life experiences and ensure adequate sample size for studies evaluating rare outcomes (e.g., peripartum cardiomyopathy, etc.).

Federal Partners engaged in a rich dialogue regarding measuring structural racism using proxy measures such as residential segregation or voter registration and highlighting novel approaches such as artificial intelligence within electronic medical records to detect and address racism. They discussed the importance of partnering with nontraditional experts to identify the types of evidence that can be useful in addressing upstream factors related to inequities. Federal Partners also discussed the use of multilevel modeling, the Modified Kalman Filter Macro, and other methods to capture differences between geographic locations with

higher and lower levels of disparities and capture accurate estimates of health outcomes for small racial/ethnic subgroups. Additionally, they recognized the need to capture a broader range of demographic data (i.e., for socially disadvantaged groups) to facilitate intersectional analyses.

Federal Partners noted the recent Supreme Court decision on affirmative action has had an impact on agencies' efforts to measure the impact of structural and systemic racism. They highlighted the importance of remaining grounded in science and creating sustainable research agendas.

Federal Partners explored how agencies are defining a minimum data set for maternal health. Ideas for driving the use of a minimum data set included working with major journals to establish required reporting elements and embedding requirements within funding announcements.

Federal Partners also explored efforts to promote greater inclusion and the challenges of obtaining diverse samples. They acknowledged that secondary data analyses may not be representative of diverse groups. Some Federal Partners shared examples of difficulties in keeping diverse participants engaged and the need to reduce stigma, support recovery, and build trust. For example, attrition in a National Institute on Drug Abuse (NIDA) longitudinal study was attributed to participants' fear of child protective services involvement. Other examples of including pregnant and underrepresented individuals in research were also shared including:

- NIH UNITE initiative promotes racial equity and inclusion at NIH and within the large biomedical research enterprise with five committees
- NIH CEAL Network for Community-Engaged Primary Care Research promotes inclusion of disproportionately affected racial and ethnic minority populations in biomedical research including clinical studies and trials
- NIH Notice of NIH's Interest in Diversity, issued in 2019, "encourages institutions to diversify their student and faculty populations to enhance the participation of individuals from groups that are underrepresented in the biomedical, clinical, behavioral and social sciences"
- NICHD Implementation Working Group is charged with monitoring and reporting on the implementation of the recommendations from the Task Force on Research Specific to Pregnant Women and Lactating Women including monitoring and reporting on updated regulations and guidance regarding the inclusion of pregnant and lactating women in clinical trials
- NIMHD Workshop on Inclusive Participation in Clinical Research provided best practices to increase inclusive participation in clinical research
- NICHD Viewpoint article in the *Journal of the American Medical Association (JAMA) Network* titled "Involving Pregnant Individuals in Clinical Research on COVID-19 Vaccines" shared strategies and recommendations

Federal Partners described the following current and future efforts underway related to recommendations for strengthening research methods and approaches:

- NIH released a cross-agency Request for Applications on understanding and addressing the impact of structural racism and discrimination on minority health and health disparities.
- NIH IMPROVE Maternal Health Research Centers of Excellence and IMPROVE-CIP, supported by the NHLBI, NICHD, NINR, and ORWH, focuses on identifying health disparities and including people most affected by maternal morbidity and mortality (e.g., African American, American Indian, and Hispanic communities as well as rural and geographically underrepresented patients) and shares models of actionable research with innovative methods and approaches such as wearable metrics and inclusion strategies (i.e., community-participatory research and community partnerships).
- CDC declared racism a public health threat, sharing data on health disparities for racial and ethnic minority groups.
- NIMHD sponsored a special supplement in *Ethnicity & Disease* on the conceptualization, operationalization, and measurement of structural racism and discrimination.
- HRSA's Pregnancy Related Care Research Network provides a multisite research forum for scientific collaboration and infrastructure building to advance the evidence base in maternal health.
- NIH, CDC, ASPE, and ONC supported the Maternal & Infant Health Information for Research Implementation Guide, which defines a framework to enable maternal health researchers to aggregate, calculate, and analyze clinical information of research populations to explore the root causes for maternal and child morbidity and mortality and standardize the exchange of clinical data on maternal and infant health.
- HRSA's Maternal Health Research Collaborative for Minority Serving Institutions builds capacity for conducting maternal health research in minority institutions.
- NASEM's Structural Racism and Rigorous Models of Social Inequity: A Workshop addressed data and methods that are needed to examine how structural racism contributes to health inequities including measures for structural racism.
- SAMHSA developed resources looking at the connection between racism and trauma-informed care.
- CMS Data Quality Atlas allows the public to access specific elements of state Medicaid data.
- NIH supported the development of the PhenX Toolkit, which includes standard data collection protocols for SDOH.

2c. Discussion Session 3 – Independent Panel Recommendation 4

Establish programs of research that carefully assess and conduct needed interventions for prevention and treatment to address maternal health, particularly among populations with excess maternal morbidity and mortality.
Conduct a systematic evidence review of existing prevention and intervention best practices to identify crucial gaps in content and evaluation methods.
Have NIH fund and conduct prevention and treatment interventions that intervene upon SDOH as a root cause of maternal morbidity and mortality.
Have the Patient-Centered Outcomes Research Institute (PCORI) and AHRQ fund and conduct evidence-based training and education research that enhances and increases the number, type, and capacities of educated health professionals involved in the prevention and treatment of adverse maternal morbidity and mortality.
Have HHS funding agencies fund and conduct studies that test social interventions that may enhance maternal health, particularly for populations whose maternal health has been adverse.
Implement and rigorously evaluate approaches from public health, policy, and clinical and health systems to improve maternal health.

Federal Partners explored the appropriate questions to ask when conducting an informative systematic review and highlighted the AHRQ systematic review currently underway entitled, Respectful Maternity Care: Dissemination and Implementation of Perinatal Safety Culture to Improve Equitable Maternal Healthcare Delivery and Outcomes. The U.S. Department of Agriculture (USDA) is also conducting an evidence review of the WIC program and will share the annotated bibliography when available. There is a need for additional research examining the intersection between SDOH and access to care as disparities have been linked to delays in seeking care and the delays in the provision of adequate care.

Federal Partners described the following current and future efforts underway related to recommendations for establishing programs of research:

- PCORI Partnering Research and Community Organizations for Novel Health Equity Research: Addressing Social and Clinical Determinants of Maternal Health (Partner Targeted PFA) supports high-quality, comparative clinical effectiveness research studies that focus on multicomponent, multilevel interventions simultaneously addressing health conditions and SDOH to improve maternal health outcomes.
- HHS Office on Women's Health's (OWH's) Hypertension Innovator Awards identifies programs that use innovative methods of blood pressure monitoring and follow-up to care during pregnancy and postpartum to address disparities.
- HHS OWH's Self-Measured Blood Pressure Program encourages organizations to address heart health disparities, promote self-measured blood pressure control, and improve health equity on a community level.

- CDC Million Hearts provides a forum for clinical, public health, and community-based partners to exchange best and promising practices, identify solutions to common obstacles, and share resources to accelerate self-measured blood pressure monitoring uptake.
- NIDA Notice of Special Interest Supporting Recovery-Oriented, Family-Centered Care for Pregnant, Postpartum, and Parenting Women with Opioid Use Disorder supports recovery and family-centered care for pregnancy postpartum and parenting women with substance abuse disorder with a focus on improving access to medications for opioid use disorders, clinical linkages, and improvements in child welfare outcomes.
- NHLBI ENRICH supports programs examining the effectiveness of an implementation-ready intervention at multiple sites to determine if a CVH module delivered within the context of a home visiting program can enhance maternal and early childhood CVH.
- NHLBI multicenter clinical trials related to improving maternal health such as Chronic Hypertension and Pregnancy and Randomized Evaluation of Bromocriptine in Myocardial Recovery Therapy for Peripartum Cardiomyopathy (REBIRTH).
- NIH IMPROVE Maternal Health Research Centers of Excellence includes 10 centers in geographically diverse areas with diverse populations; two centers developing common data elements and models; and centers sharing collection methods and translating findings into practice. All centers have a health equity lens with three centers focusing on AN/AI and covering a variety of conditions, populations, and health care indicators over multiple gestational timepoints.
- ASPE completed a brief evidence review on Doula Care and Maternal Health.
- CMS Strong Start initiative shared preliminary results showing individuals cared for through the midwivery model with individualized education and an intensive whole person approach had lower rates of preterm and low-birthweight infants and lower rates of ceserean section and other findings related to SDOH.
- NHLBI and NICHD nuMoM2b and Heart Health Study—two studies that followed 7,000–10,000 participants longitudinally to learn how pregnancy problems are linked to early signs of future health disease—show correlations between social factors such as health literacy and social economic status and clinical outcomes.
- USDA shared maternal and neonatal birth outcomes for the WIC program from Maternal and Child Outcomes Associated With the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).
- Veterans Affairs (VA) is implementing and evaluating a program that includes maternity care coordinators who provide linkages with primary care, mental health, housing, food support, and other social services.
- White House Blueprint for Addressing the Maternal Health Crisis includes a pillar to expand and diversify the prenatal workforce.
- ASPE released a series of reports highlighting evidence-based approaches to improving health and well-being of pregnant persons and children affected by substance use.
- SAMHSA Services Grant Program for Residential Treatment for Pregnant and Postpartum Women supports comprehensive substance use treatment and recovery

support services for pregnant and postpartum women and their children across residential and outpatient settings.

- SAMHSA State Pilot Grant Program for Treatment for Pregnant and Postpartum Women supports family-based services for pregnant and postpartum women who have a primary diagnosis of a substance use disorder (SUD), helping state agencies address the continuum of SUD care, including services in nonresidential settings and new approaches/models of service delivery.
- SAMHSA released Evidence-Based, Whole Person Care of Pregnant People Who Have Opioid Use Disorder, a SAMHSA Advisory outlining how health care providers such as obstetrician-gynecologists, primary care physicians, and other professionals who treat pregnant people can take an active role in supporting the health of pregnant individuals who have opioid use disorders and their babies, as well as several resource documents providing best practices.
- SAMHSA shared the need for screening for perinatal depression for sexual minority women.
- NICHD Notice of Funding Opportunity Health and Health Care Disparities Among Persons Living with Disabilities supports research examining access to pregnancy and reproductive health care in people living with disabilities among populations experiencing health disparities.
- National Institute of Mental Health and NIMHD Notice of Funding Opportunity Understanding the Impact of the Healthcare System and Clinician Factors on Disparities in Maternal Morbidity and Mortality supports multidisciplinary and innovative intervention research to understand and address maternal morbidity and mortality in the United States, particularly but not exclusively among racial and ethnic minority, socioeconomically disadvantaged, and underserved rural populations, with a focus on understudied health care factors.
- ORWH Notice of Special Interest Research on the Health of Women of Understudied, Underrepresented and Underreported (U3) Populations provided administrative supplements to support research highlighting health inequities among women in the United States who are understudied, underrepresented, and underreported in biomedical research.
- NIMHD Reducing Racial Disparities in SMM post COVID19: Assessing the integration of maternal safety bundles and community based doulas to improve outcomes for Black women used longitudinally-linked hospital discharge data to characterize preconception, prenatal, and postpartum hospital encounters and identify key points where opportunities to intervene were missed; assessed the impact of implementing maternal safety bundles to ensure that Black women received quality obstetric care; and examined the impact of integrating community-based doula support.
- AHRQ Re-engineering Postnatal Unit Care and the Transition Home to Reduce Perinatal Morbidity and Mortality identified priority unmet needs on postnatal units that contributed to poor maternal and infant outcomes and provided recommendations for more effective mother-infant "dyadic" management to facilitate improved safety and wellness.

- Department of Housing and Urban Development (HUD) shared an article More Than Shelter: Housing for Urban Maternal and Infant Health that summarizes the influence of historical housing discrimination on maternal health outcomes and identifies emergent practice-based housing interventions in planning and public health practice to support infant and maternal health.
- HRSA Screening and Treatment for Maternal Mental Health and Substance Use Disorders supports health care providers' efforts to expand their capacity to screen, assess, treat, and refer pregnant and postpartum people for maternal mental health and substance use disorders.
- SAMHSA Substance Use Prevention, Treatment, and Recovery Services Block Grant provides funds to all states, territories, and jurisdictions targeting populations including pregnant women and women with dependent children.
- NICHD and NASEM Birth Settings in America: Outcomes, Quality, Access, and Choice assesses health outcomes by birth settings.
- NICHD Home Birth in the US: data-driven safety improvements is comparing maternal and fetal/neonatal outcomes for planned home vs. planned birth center births in the United States and describing circumstances under which excess fetal and neonatal deaths accrue among planned community births.
- HHS supported an evidence review for Home Visiting and found that the HRSA MIECHV Program, which supports pregnant people and parents with young children with greater risks and barriers to achieving positive maternal and child health outcomes, had positive effects on family outcomes.
- The HRSA-supported Alliance for Innovation on Maternal Health developed an Obstetric Emergency Readiness Resource Kit containing best practices and planning materials for use by teams in health care settings that may not typically provide obstetric services.

2d. Discussion Session 4 – Independent Panel Recommendation 5

Pay for evidence-informed clinical approaches that improve maternal health across the life course.
Improve access to services through Medicaid expansion.
Increase access to contraceptive and abortion care.
Mandate coverage for maternal, newborn, and mental health services for up to one year.
Address provider shortages to reduce maternal care deserts by removing legislative and regulatory barriers that prohibit practice in rural and underserved communities for advanced practice registered nurses and other health care providers.
Address inadequate reimbursement of doulas, midwives, and other services.

Federal Partners discussed how the expansion allowing states to provide continuous Medicaid and CHIP coverage for a full year after pregnancy will be assessed. ASPE and others are examining Medicaid data and linking it to state data with vital records to understand who is pregnant. They are conducting affinity groups and providing technical assistance to examine the quality of postpartum care. While CMS expects to see results over the next five years, Center for Medicare and Medicaid Innovation (CMMI) reminded Federal Partners of the need for external partners since their internal capacity is limited for conducting rigorous evaluation. While the lack of a comparison group presents challenges, claims data may be used as indicators of intimate violence and other factors.

Federal Partners discussed logistics challenges to accessing care. The group considered the need for alternatives such as Uber/Lyft to resolve transportation issues. HRSA reported that travel vouchers are shared in several grant-supported initiatives such as the Rural Maternity and Obstetrics Management Strategies (RMOMS) Program. NHLBI has also provided blood pressure cuffs and glucose tests to high-risk individuals to promote continuing care.

Federal Partners acknowledged that the panel recommendation for access to contraceptive and abortion care is an evidence-informed clinical approach that improves maternal health across the life course. The Federal Partners discussed these two aspects of reproductive health care separately from one another.

CDC is updating the US Selected Practice Recommendations for Contraceptive Use and the US Medical Eligibility Criteria for Contraceptive Use, which provide recommendations for the use of specific contraceptive methods by patients who have certain characteristics or medical conditions. The guidelines will be available in 2024.

CMS indicated that Medicaid covers family planning discussions including postpartum family planning, but many states do not cover long-acting reversible contraception or implants at birth. Walk-in contraception access is available through the Department of Defense (DOD) and VA systems.

Federal Partners shared examples of the complexities related to abortion care. For example, while both the DOD and IHS indicated that insurance coverage is available for abortion in instances of rape, incest, and when the life of the mother is at risk, the DOD and VA indicated that abortion access is restricted in the states where it is illegal. The Bureau of Prisons also indicated that abortion care is available when the life of the mother is at risk. Further research is needed to understand the health and mental health outcomes related to abortion care and prenatal loss (i.e., miscarriage and stillbirth) over the life course.

IHS shared that while prior to COVID-19 it was common for AI families to have up to a dozen family members present for the birth of a child, this support stopped during the pandemic and has not resumed. Doula care or midwivery could fill the gap in supporting AI and AN during the birthing process.

HRSA shared a resource discussing the State of the Maternal Health Workforce. Federal Partners discussed evidence of the effectiveness of doulas, midwives, and advanced practice nurses, emphasizing their potential role in working alongside other providers to fill the workforce shortage, connect with community members, and provide culturally sensitive care. Reimbursement was acknowledged as a barrier.

DOL Women's Bureau developed an Issue Brief Expanding and Diversifying the Doula Workforce: Challenges and Opportunities of Increasing Coverage. CMS shared challenges with including midwives in managed care networks and small OB practices (i.e., where most Medicaid patients receive their care) due to certification, licensing, and low reimbursement. Some Federal Partners indicated that there is a need to better understand and define the effective components of doula care and midwivery to justify and support appropriate reimbursement. They explored whether doulas conduct (or could conduct) mental health or other screenings as a part of the care process. Future research may examine and compare state certifications for doula care and midwivery and Medicaid data to better understand the impact of this care on access, quality of care, and outcomes similar to what was done to establish the roles of community health workers.

Federal Partners described the following current and future efforts underway including recent publications and ongoing opportunities related to recommendations concerning paying for evidence-informed clinical approaches:

- NICHD supports studies of targeted cash payments conditioned on the use of maternal health services such as Improving Perinatal Outcomes Using Conditional and Targeted Transfers.
- The VA recently expanded access to maternity care coordinators from the beginning of pregnancy to 12 months postpartum paying for screening and linkages with health, mental health, and social services.
- HRSA's Maternal and Child Health Bureau supports a coalition of national health professional organizations and patient advocates with expertise in women's health to

develop, review, and update recommendations for the Women's Preventive Services Guidelines.

- HRSA's Healthy Start programs use community-based doulas to improve birth outcomes and provide culturally responsive pregnancy and childbirth education to families.
- U.S. Senate Committee on Finance held hearings recently exploring paid leave and conducted an analysis of California's paid family leave policy on parental health. NIH has supported research on the impact of paid family leave policies.
    - Bureau of Labor Statistics also collects data on parental leave.
- AHRQ Reducing Postpartum Health Care Disparities through Increased Insurance Coverage after Childbirth is evaluating the effect of Medicaid expansion on racial/ethnic disparities in postpartum insurance coverage both nationally and in Arkansas specifically.
- AHRQ Improving Maternal and Child Health in the Year After Birth: An Early Evaluation of Postpartum Medicaid Eligibility Extensions is exploring state variation in maternal insurance enrollment, health care use, and health; children's insurance enrollment, health care use, and health; and outcomes among subsequent pregnancies including rates of short interpregnancy interval and preterm births.
- NIMHD Hospital quality, Medicaid expansion, and racial/ethnic disparities in maternal mortality and morbidity is examining within-hospital racial/ethnic disparities in risk-adjusted maternal mortality and severe morbidity and identifying whether these disparities are associated with medical insurance types and SDOH.
- NICHD-supported work on the publication, The Pregnancy-Related Mortality Impact of a Total Abortion Ban in the United States: A Research Note on Increased Deaths Due to Remaining Pregnant estimated United States pregnancy-related deaths by race and ethnicity before and in the first and subsequent years of a hypothetical total abortion ban.
- HRSA Maternity Care Target Area (MCTA) Supplemental Award provides up to $40,000 in loan repayment funding to maternity care health professional participants.
- DOD Women's Reproductive Health Survey (WRHS) of Active-Duty Service Members captured experiences with family planning services, counseling, and the availability of birth control in the military.
- CDC and U.S. Office of Population Affairs published Providing Quality Family Planning Services Recommendations in 2017.

2e. Discussion Session 5 – Independent Panel Recommendation 1

Fund and implement a "Maternal Mortality and Morbidity Prevention Moonshot."
Convene multiple federal agencies to review funding possibilities for fundamentally transformative prevention research initiatives.
Approach the NIH Director with a Common Fund proposal.
Consult with leaders from the California Maternal Quality Care Collaborative for approaches that should be tested and implemented in this moonshot.
Collaborate with NASEM to convene a workshop to establish moonshot goals, deliverables, and timelines.

Federal Partners agreed that there is a real sense of urgency when looking at the data. They discussed challenges with blending federal agency dollars and the steps needed to develop a transformative research initiative facilitated by cross-agency collaboration and intersectional layers of information. The notion of a moonshot is taken from the White House's Cancer Moonshot (authorized and funded through the 21st Century Cures Act) that is aimed at ending cancer using a public/private partnership approach. The White House's Maternal Health Call to Action, Blueprint for Addressing the Maternal Health Crisis, and the Surgeon General's Call to Action to Improve Maternal Health (PDF) also provide a foundation for further scaled-up efforts.

Federal Partners discussed the recommendation of approaching the NIH Director with a Common Fund proposal. The NIH Common Fund is a funding entity within the NIH that supports bold scientific programs to stimulate advances in biomedical and behavioral research. Multiple NIH ICOs and investigators collaborate to address high priority challenges for the NIH and support advances that otherwise would not be possible without strategic investment. Common Fund proposals fund projects that are time-limited, goal-driven programs and support high-risk high-reward science in ways that other entities are unable to do.

Federal Partners exchanged ideas on elements that would strengthen an application for a Common Fund proposal such as defining a clear "get," specifically describing how improvement and impact will be measured, and providing a strong link to health disparities and equity. When discussing how such a large-scale effort would build and complement the efforts currently underway, some raised that one drawback is that the impact results of the IMPROVE Centers of Excellence (funded in August 2023) are not yet available.

Experience with the Helping to End Addiction Long-term (HEAL) Initiative included identifying geographic hotspots and engaging community stakeholders to solve the crisis. An analogous approach to improve maternal health outcomes was discussed as an option. Federal Partners pointed to the positive outcomes from the California Maternal Quality Care Collaborative's model (which is also used as a blueprint by the military health system) and agreed that a proposal to the NIH Common Fund would potentially allow work on a much larger scale, allowing models such as California's to be examined in other geographic settings.

Federal Partners expressed an interest in meeting with the NIH CCM3 to discuss submitting a Common Fund proposal as a first step towards the broader initiative of the Maternal Mortality and Morbidity Prevention Moonshot. NICHD will continue to document the impacts of the IMPROVE Centers of Excellence to serve as foundational evidence for the proposal. They also expressed an interest in using the Small Business Innovation Research and Small Business Technology Transfer mechanisms to put forth projects across ICOs.

Some raised an interest in scaling up efforts that would allow doulas and midwives to work alongside of obstetric doctors and offering specialized care to those in early pregnancy with obesity, who are more at risk for adverse outcomes, similar to efforts in the IHS.

Federal Partners described the following current and future efforts underway related to recommendations about funding and implementing a moonshot:

- HRSA State Maternal Health Innovation Program and Maternal and Child Health Services Block Grant awardees can potentially assist with testing and implementation.
- The CMS Maternal Opioid Misuse (MOM) Model addresses fragmentation in the care of pregnant and postpartum Medicaid beneficiaries with opioid use disorders and provides an example of a state-drive approach to transforming the delivery system.
- CMS Transforming Clinical Practice Initiative provides technical assistance to share quality improvement strategies.
- NASEM's recent workshop, Advancing Maternal Health Equity and Reducing Maternal Morbidity and Mortality, explored factors needed to enable communities and the health care system to reduce maternal morbidity and mortality.

3. Opportunities for Collaboration and Actionable Items

A discussion of opportunities for federal agency collaboration and actionable items related to all key questions and independent panel recommendations encompassed the following overarching, cross-cutting themes:

Harmonize Maternal Health Data

Federal Partners agreed NIH can support data collection and analyses for NIH-funded research and other agencies' programs. Federal Partners expressed an interest in developing common reporting metrics and mechanisms to better understand the data that currently exists to address structural racism and the research gaps for this area. Common reporting metrics will facilitate evidence synthesis and the identification of evidence gaps. Federal Partners were interested in supporting partnerships to share data to understand and address individuals across the life course.

Examples of Action Steps:

- CMS encouraged the use of publicly available Transformed Medicaid Statistical Information System (T-MSIS) data to assess the expansion efforts allowing states to provide continuous Medicaid and CHIP coverage for a full year after pregnancy.
- CMMI and USDA expressed interest in partnering to develop a stronger collaboration with WIC and work on data sharing challenges.
- HRSA expressed interest in building collaborations between HRSA's Maternal Health Research Collaborative for Minority-Serving Institutions and NIH's Maternal Health Research Centers of Excellence.
- SAMHSA may have data to share from the Services Grant Program for Residential Treatment for Pregnant and Postpartum Women program.

Test and Disseminate Innovative Approaches and Models

Federal Partners expressed the need for bold policy advances that attend to the intersecting needs of racism, poverty (including food and housing insecurity), inadequate child and postpartum support, and other structural impacts on health (such as internet access to support medical care). Several federal agencies expressed an interest in collaborating to test and disseminate innovative approaches and models that may be incorporated in future policies.

Examples of Action Steps:

- HRSA plans to continue to research/develop upstream interventions (particularly for prematurity, the leading cause of infant deaths) and on key topics (e.g., stillbirth, integration of doulas into prenatal care, eliminating barriers to care in rural settings).
- CMS will be testing technical assistance and increased partnerships at state Medicaid agencies to promote access, infrastructure development, and workforce expansion as well as leverage evidence-based strategies.
- California Preterm Birth Initiative's Abundant Birth Project provides unconditional cash supplements to African American and Pacific Islander mothers as a strategy to reduce preterm births and improve economic outcomes in under-resourced communities. Federal Partners expressed an interest in seeing an evaluation of this initiative.

Improve Continuity of Care

Federal Partners discussed the importance of preserving prenatal care relationships through the pregnancy and postpartum periods (i.e., between obstetricians and primary care physicians) as well as facilitating hand-offs from providers with strong relationships that promote trust. Hand-offs should address whole person wellness such as food insecurity, mental health and addictions support, and housing.

Examples of Action Steps:

- ODP would like to continue to engage NIH, HUD, and CDC through the Health and Housing Group to explore further opportunities for collaboration.
- NIDA would like to leverage the Clinical Trials Network (CTN) to focus on postpartum health and addictions in the future. They have broad populations and settings. Additional funding support is needed for ancillary studies to answer specific questions.

Develop the Workforce and Increase Partnerships

Federal Partners discussed maternity care deserts or geographic regions that lack resources for individuals before, during, and after pregnancy. Incentives, training and education, credentialing, mentor/buddy programs, and telehealth were discussed to address provider shortages. The importance of research and community partnerships was also highlighted.

Examples of Action Steps:

- HRSA and USDA would like to continue to collaborate to inform the ongoing development of the National Workforce Strategy.
- Federal Partners would like to pursue collaborations between HRSA Minority Serving Institutions, NHLBI ENRICH Multisite Clinical Centers, and IMPROVE Centers of Excellence.
- HRSA will continue to collaborate between HRSA's Alliance for Innovation on Maternal Health (AIM) and State Maternal Health Innovation program and the CDC's Maternal Mortality Review Committees and Perinatal Quality Collaboratives.

Engage the Community and Pregnant/Postpartum Persons

Federal Partners stated that community engagement in research needs to start at the beginning or conceptualization of the research questions. They expressed the importance of recruiting participants from sites that provide diversity of underserved populations and specifically including pregnant, postpartum, and lactating women in research. Federal Partners discussed how the risks of excluding pregnant or postpartum women from research may outweigh the risks of including them. They emphasized developing trust and engaging the community in all aspects of the research process.

- NIH will continue to use the collaborative grant mechanisms that are currently in place to further work in this area such as:
    - Addressing the Impact of Structural Racism and Discrimination on Minority Health and Health Disparities
    - Measures and Methods to Advance Research on Minority Health and Health Disparities-Related Constructs

- NIDA will gather lessons learned from the HEALthy Brain and Child Development (HBCD) Study on how to keep pregnant and postpartum persons with substance use conditions engaged in research.

Fund and Implement a "Maternal Mortality and Morbidity Prevention Moonshot"

The Maternal Mortality and Morbidity Prevention Moonshot will more broadly cover any efforts achieved through the NIH Common Fund, the IMPROVE initiative, and other initiatives underway by all Federal Partners to build on a solid foundation of scientific research. By focusing on areas of maternal health research that are most likely to benefit patients because of new investment, the Maternal Mortality and Morbidity Prevention Moonshot will bring together a large community of patients, advocates, researchers, and clinicians who are dedicated to advancing research to improve the health and lives of pregnant and postpartum people and their loved ones.

4. Next Steps and Concluding Remarks

ODP and NIH ICOs encourage continued active engagement, discussion, and collaboration to implement actionable items identified during this meeting and further the independent panel recommendations.

ODP conducts assessments of the impact of the P2P program. Impact assessments focus on capturing whether the P2P process promotes investments, impacts the science, promotes new partnerships and collaborations, and encourages collaborations with professional and community groups. ODP looks forward to further supporting and tracking ongoing work in this area over the coming years.

Appendix A

National Institutes of Health Pathways to Prevention (P2P) Program: Identifying Risks and Interventions to Optimize Postpartum Health

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APPENDIX B

NATIONAL INSTITUTES OF HEALTH PATHWAYS TO PREVENTION (P2P) PROGRAM: INDEPENDENT PANEL RECOMMENDATIONS

1. **Fund and implement a "Maternal Morbidity and Mortality Prevention Moonshot."**

    - Convene multiple federal agencies to review funding possibilities for a fundamentally transformative prevention research initiative.
    - Approach the National Institutes of Health (NIH) Director with a Common Fund proposal.
    - Consult with leaders from the California Maternal Quality Care Collaborative for approaches that should be tested and implemented in this moonshot.
    - Collaborate with the National Academies of Sciences, Engineering, and Medicine to convene a workshop to establish moonshot goals, deliverables, and timelines.

2. **Employ a comprehensive, multilevel life course conceptual framework in policy, research, and clinical transformations to improve maternal health at all ages.**

    - Embrace a life course perspective to examine the long-lasting impacts of trauma, structural racism, poverty, and other social and structural determinants at societal, community, and interpersonal and individual levels.
    - Apply a "disparities lens" to studies—always examining not only population averages but also how indicators vary over time across more and less socially advantaged groups of people.
    - Incorporate contextual factors that address the multilevel life course model, particularly for those who experience the greatest disparities.
    - Integrate support and services that are tailored to individuals' needs and visualize reproductive health trajectories, developmental effects of early childhood experiences, and the cumulative impacts of chronic stressors.

3. **Strengthen the research methods and approaches used within the science of maternal health. Future funding opportunities and funded studies should seek to:**

    - Improve techniques and methods that estimate causal impacts of structural and systemic racism.
    - Develop/create standardized reporting measures/metrics of maternal health exposures and outcomes that could enhance greater synthesis of research findings.
    - Promote greater inclusion of pregnant and postpartum/lactating women in research studies.

- Create robust datasets designed to capture the impact of systemic racism and social/structural determinants of health and their intersections with medical risk factors.
- Encourage the use of broad clinical networks and larger samples in studying peripartum health to include participants from diverse backgrounds and life experiences and ensure adequate sample size for studies evaluating rare outcomes (e.g., peripartum cardiomyopathy, etc.).

4. **Establish programs of research that carefully assess and conduct needed interventions for prevention and treatment to address maternal health, particularly among populations with excess maternal morbidity and mortality.**

    - Conduct a systematic evidence review of existing prevention and intervention best practices to identify crucial gaps in content and evaluation methods.
    - Have NIH fund and conduct prevention and treatment interventions that intervene upon structural and social determinants of health as a root cause of maternal morbidity and mortality.
    - Have the Patient-Centered Outcomes Research Institute (PCORI) and the Agency for Healthcare Research and Quality (AHRQ) fund and conduct evidence-based training and education research that enhances and increases the number, type, and capacities of educated health professionals involved in the prevention and treatment of adverse maternal morbidity and mortality.
    - Have the Department of Health and Human Services (HHS) agencies fund and conduct studies that test social interventions that may enhance maternal health, particularly for populations whose maternal health has been adverse.
    - Implement and rigorously evaluate approaches from public health, policy, and clinical and health systems to improve maternal health.

5. **Pay for evidence-informed clinical approaches that improve maternal health across the life course.**

    - Improve access to services through Medicaid expansion.
    - Increase access to contraceptive and abortion care.
    - Mandate coverage for maternal, newborn, and mental health services for up to one year.
    - Address provider shortages to reduce maternal care deserts by removing legislative and regulatory barriers that prohibit practice in rural and underserved communities for advanced practice registered nurses and other health care providers.
    - Address inadequate reimbursement of doulas and midwives and other services.

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