

# Surgeon General's Conference on the Prevention of Preterm Birth

Diane M. Ashton, MD, MPH, Hal C. Lawrence III, MD, Nelson L. Adams III, MD, and Alan R. Fleischman, MD

To address the serious and seemingly intractable problem of preterm birth, the Surgeon General's Conference on the Prevention of Preterm Birth convened many of the country's experts from the public and private sectors of research, public health, and health care delivery to discuss preventive strategies. The purpose of the conference was to increase awareness of preterm birth in the United States, review key findings and reports issued by experts in the field, and establish an agenda for activities in both the public and private sectors to mitigate the problem. The six work groups created focused on biomedical research, epidemiological research, psychosocial and behavioral factors in preterm birth, professional education and training, outreach and communication, and quality of care and health services. Several cross-cutting issues between the work groups were identified, and the conference concluded with the request to the Surgeon General to make the prevention of preterm birth a national public health priority. Reaching this goal through the implementation of the conference recommendations will require new resources to create broad-based research capacity, a vigorous na-

tional vital records system, multidisciplinary intervention programs, careful study of factors contributing to racial and ethnic disparities, reinvigorated health professional and consumer education programs, and access to high-quality preconception and perinatal healthcare for all Americans. Clinicians must be adequately informed to initiate activities to prevent this serious problem. Recommendations from this conference will inform Congress and create a national agenda to address the identification of the causes, risk factors, prevention, and treatment of preterm birth.

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National Office, March of Dimes, White Plains, New York; American College of Obstetricians and Gynecologists, Washington, DC; Department of Obstetrics and Gynecology, Jackson North Medical Center, North Miami Beach, Florida; National Medical Association, Washington, DC; Board of Trustees for Access Health Solutions, Sunrise, Florida; SUNY Downstate, Health Science Center at Brooklyn, Brooklyn, New York; Advisory Committee to the National Children's Study at the National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, Maryland; Department of Pediatrics and Department of Epidemiology and Population Health, Albert Einstein College of Medicine, Bronx, New York.

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Corresponding author: Diane M. Ashton, MD, MPH, Deputy Medical Director, March of Dimes, 1275 Mamaroneck Avenue, White Plains, NY 10605; e-mail: [dashton@marchofdimes.com](mailto:dashton@marchofdimes.com).

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Each year, more than 500,000 infants are born preterm in the United States. Preterm birth is a leading cause of infant mortality and long-term morbidity, and the steadily increasing rate continues to present a seemingly intractable public health challenge. According to 2006 preliminary data, 12.8% of U.S. births were preterm, representing a 21% increase since 1990.<sup>1</sup> As a result of the advances in research and improvements in clinical care, many of these newborns survive, and some thrive with minimal long-term sequelae. However, a sizeable number are vulnerable to long-term complications that can persist over their lifetime. A detailed analysis for the most common outcomes of prematurity, including economic implications, was presented in a report from the Institute of Medicine, *Preterm Birth: Causes, Consequences and Prevention*, published in 2006. During 2005, the cost of preterm births in the United States was estimated at \$26.2 billion or \$51,600 per infant born preterm that year.<sup>2</sup> Prematurity is not only a common and costly public health problem, it is also complex with multiple etiologies. Preterm birth remains a medical enigma and presents a significant challenge for our economic, public health, and clinical health care systems.

In 2006, the President signed into law the Prematurity Research Expansion and Education for Mothers who deliver Infants Early (PREEMIE) Act.<sup>3</sup> It



authorized the expansion of research into the causes and prevention of prematurity, proposed increased federal support of professional education to work toward an evidence-based standard of care for pregnant women at risk for preterm labor and for infants born preterm or low birth weight, and called upon the Surgeon General to convene a conference on the prevention of preterm birth. The resulting Surgeon General's Conference on the Prevention of Preterm Birth was held on June 16–17, 2008. Many of the country's foremost experts and leaders from the public and private sectors of research, public health, and health care delivery were invited to discuss strategies aimed at preventing preterm birth. Conference participation was open to the general public and enrollment was solicited through an online invitation and registration process. The purpose of the conference was threefold:

- Increase awareness of preterm birth as a serious, common, and costly public health problem.
- Review key findings and reports issued by experts in the field.
- Establish an agenda for activities in both the public and private sectors to mitigate this problem.

The first day of the Conference was devoted to deliberations by six work groups: 1) biomedical research, 2) epidemiological research, 3) psychosocial and behavioral factors in preterm birth, 4) professional education and training, 5) outreach and communication, and 6) quality of care and health services. The work groups each identified short-, medium-, and long-term recommendations that were discussed and modified based on public input on the second day of the conference. Work group chairs were also convened to articulate cross-cutting issues and make recommendations that reached across work group areas. These recommendations received public input as well. All final recommendations were presented to the Surgeon General, and at the conclusion of the conference, each participant received a compact disc with the final report of the conference containing files outlining all findings and recommendations.

It is important that the clinical community is knowledgeable about the serious and seemingly intractable challenges presented by the increasing rates of preterm birth. Attention must be focused on this problem to avert the devastating effect it has on our health care system and affected families. It is the intent of this article to disseminate the key findings and recommendations from the conference to a broader audience and stimulate action among health care providers to implement activities that will prevent preterm birth.

## WORK GROUP RECOMMENDATIONS

### 1. Biomedical Research

Significant biomedical research has been conducted to identify the causes of preterm birth, yet few definitive etiologies have been determined to date. In reviewing the current status of research on preterm birth, a strong case was made for researchers to pursue better predictors of preterm birth to develop prevention strategies and facilitate early diagnosis. A better understanding of the basic mechanisms underlying its etiology must be established, including the role of such factors as infection, inflammation, abnormal implantation and placentation, and gene–environment interactions. This requires studying risk factors both independently and woven together into a constellation of lifestyle factors, including sociodemographic status and community contributions. The integration of new and evolving fields such as genomics, epigenetics and proteomics, employing advanced molecular techniques, and using systems biology that incorporate multidisciplinary approaches, has the potential to provide a greater understanding of the pathways to preterm birth and aid in the development of new biomarkers. Specific recommendations included:

- Identify improved biomarkers to predict preterm birth, identify methods to assess more accurately antenatal fetal maturity, and investigate risks and benefits associated with indicated early and late preterm birth.
- Enhance understanding of the physiology of normal labor and delivery; the pathological processes leading to preterm birth, including genetic, epigenetic, and environmental interactions; and the mechanism of action for promising prenatal and preconception therapies/interventions such as 17 alpha-hydroxyprogesterone caproate and folic acid.
- Identify factors influencing the rise in preterm births with a focus on late preterm birth, multiple gestations, and non-medically indicated preterm birth and support studies relating preterm birth to other adverse pregnancy outcomes—stillbirth, preeclampsia, congenital anomalies, and placental abruption.

### 2. Epidemiological Research

The causes of preterm birth, particularly the racial and ethnic disparities in the adverse outcomes of pregnancy, are multiple and not well understood. Epidemiologic research must address the heterogene-



ity of preterm birth and identify methods to characterize preterm births according to underlying causes. Strengthening national and state vital records systems should become a national priority for tracking the problem of preterm birth. More detailed data are needed to understand the burden of preterm birth and to evaluate contributing factors, such as infertility treatments; obstetrical practices and decision making; maternal, paternal, and infant biomarkers; environmental factors; and categories of the types of preterm delivery based on known or suspected causes. Validated measures of racism, health care biases, and related stress are needed.

There is a need for prospective cohort studies, population-based studies, and development of multidisciplinary research centers that investigate, in an integrated fashion, the epidemiologic, demographic, social, behavioral, nutritional, clinical, environmental, genetic, and biological factors that all affect risk of preterm birth and associated racial disparities. Additional research is needed to evaluate clinical, social, and public health programs and policies aimed at the prevention of preterm birth. Specific recommendations included:

- Identify multidisciplinary research on racial and ethnic disparities as a priority.
- Study the differential outcomes of preterm birth by cause and conduct epidemiological research that investigates clinical, biological, social, genetic, and behavioral factors simultaneously.
- Examine the effect of various types of infertility treatments, including ovulation stimulation and assisted reproductive technologies on preterm birth and evaluate programs aimed at decreasing multiple gestation rates.

### 3. Psychosocial and Behavioral Considerations

Psychosocial and behavioral factors are possible mediators or moderators of biomedical determinants of preterm birth and contribute substantially to racial, ethnic, and socioeconomic disparities. Known behavioral risk factors for preterm birth, such as smoking and alcohol and drug use, require that effective implementation strategies be universally funded. Individual behavioral risk factors as well as multiple, interconnected factors that result in preterm birth need to be studied not only just before or during pregnancy but across the life course. One critical psychosocial issue is racism. It is a significant psychosocial stressor affecting the biology of pregnancy and may also function potently through its socioeconomic consequences. Specific recommendations included:

- Research on the effects of race, racism, and social injustice for African Americans must be a priority as they bear the highest burden of prematurity.
- Develop a blue-ribbon panel for studying the definition, conceptualization, measurement, and biological correlates of stress in prematurity research and improve the measurement of other psychosocial and behavioral risk factors to promote consistency in research.
- Evaluate existing large-scale intervention programs and maximize the use of existing data to better understand psychosocial and behavioral determinants of preterm birth and its prevention.
- Promote community-based participatory research on preterm birth, utilizing both qualitative (eg, ethnography) and quantitative research methods.
- Develop methods to study causes and prevention of preterm birth across the life course in a multiple-determinants framework.

### 4. Professional Education and Training

Professional education and training of physicians, nurses, social workers, and other allied professionals who encounter preterm birth is severely hampered by a lack of data on the causes of preterm birth and diagnostic markers to identify risk. The education and training of professionals on preterm birth should be comprehensive, targeted to the discipline, incorporate the social determinants of health, and provide skills enabling them to educate the public and patients. Although recently the number of medical students choosing to specialize in obstetrics and gynecology has increased, there is still an acute need for additional specialists who focus on clinical care and research in this area. More targeted career development and mentoring programs are critically needed, and the barrier presented by the cost of medical education and medical liability insurance needs to be addressed.

Primary care professionals must be knowledgeable about behavioral and addiction health care services, and such services must be made immediately available to patients in need. Federally qualified health centers should be sites for professional training and provide opportunities for local community health issues to be integrated into the training content. Specific recommendations included:

- All health professionals need to be trained in core risk factors for preterm birth.



- Professionals need to incorporate a life course perspective into care to emphasize the different psychosocial and behavior risk factors and the importance of preconceptional and interconceptional care.
- Clinical team education including curriculum development, on-site educational opportunities, and ongoing evaluation is important.
- All professionals require culturally sensitive communication skills to help educate patients and families concerning reproductive planning, prematurity prevention, and decreasing the incidence of childbearing at the extremes of reproductive age.
- Professional organizations should inform policymakers and link evidence-based management of prevention of preterm birth to maintenance of certification.

## 5. Public Communication and Outreach

Several potential audiences should be made aware of the most recent research findings on preterm birth, including women of reproductive age and their families, health care providers, medical/health institutions, and both government and nongovernment policymakers. There is a need for further investigation to quantify the economic consequences of preterm birth because the long-term medical, educational, and productivity costs borne by individuals, families, and society are not well understood.

Communication mechanisms to inform all relevant audiences are required for quick dissemination of new information on the effect of healthy lifestyles, preventive measures, interventions, and treatments as it becomes available. The communication of messages and programs must be clear, understandable, and presented to audiences in a culturally appropriate manner that will motivate a behavioral change. To address a lack of awareness of risk among most women, there is a need to communicate that risk in terms of poignant messages and statistics that resonate with the intended audiences. Since there is significant racial disparity in the incidence of premature birth, messages must specifically take into account women from high-risk populations. They should receive messages that empower actions such as seeking preconception care, family planning, and early prenatal care to reduce risk. Specific recommendations included:

- Develop a national education and action program to communicate what is known about

preterm birth and how to reduce its incidence in high-risk populations.

- Establish partnerships across public, private, and professional organizations to encourage collaboration and shared dissemination networks to implement communication strategies, treatment plans, and best practices.
- Develop culturally appropriate health literature to communicate the risk and consequences of preterm birth and identify the best practices to improve birth outcomes.
- Develop an instrument to assist an individual to understand her risk for preterm birth.

## 6. Quality of Care and Health Services

The care and treatment of women before and during pregnancy should be equitable, individualized, and consistent across populations. Health care systems and practitioners should implement practices that are known to be effective and should collect data about the quality of patient care and services provided. Improved measures to accurately predict preterm labor in women at increased risk are needed. The development of these measures is critical and, when accomplished, may warrant revisions in the content and structure of prenatal care. After better prevention and intervention strategies have been achieved, quality incentives to reduce preterm births can be implemented. Specific recommendations included:

- Make prevention of preterm delivery, management of preterm labor, and care of preterm infants and their families a coordinated national health priority across federal, state, and local agencies.
- Assure access to appropriate preventive and intervention measures and access to health care coverage and care for all women of childbearing age; preconception, interconception, and early prenatal care; and access to health care coverage and services for all children.
- Payers for health services should align with recommended clinical practice, including private health insurance, Medicaid, State Children's Health Insurance Program, Medicare, and other publicly supported programs; reimbursement should include equity in reimbursement.
- Quality measures related to prevention and management of preterm birth should be implemented for systems of clinical care.



- Quality measures for specific clinical practices should be developed where there is sufficient evidence of positive effect, such as smoking cessation, reducing the frequency of multi-fetal gestation in fertility treatment outcomes, implementation of the American College of Obstetricians and Gynecologists guideline to avoid unwarranted elective inductions or cesarean deliveries before 39 weeks of gestation, and ensuring that preterm newborns have access to the appropriate level of neonatal intensive care unit services.
- Enhance and link data and surveillance systems and use health care data to conduct and inform clinical and epidemiological research; birth weight and gestational age should be included in all reporting systems that collect health data about infants, children, pregnancy status, and outcomes.
- Health services research should include assessment of long-term morbidity, mortality, and quality of life to inform policy; the National Children's Study should be utilized as a potential data resource.
- Collect primary data and link databases for analyses of medical and nonmedical costs and family consequences, both economic and noneconomic, of preterm birth.
- Healthy People 2020 objectives should specifically set goals to reduce the frequency of preterm birth and reduce morbidity and mortality from preterm birth.

## CROSS-CUTTING ISSUES AND CONCLUSIONS

Several cross-cutting issues, essential to the proposed action plan to prevent preterm birth, were identified among the six work groups and validated by public input.

- There is a need for the acquisition of new knowledge through the establishment of a national initiative for interdisciplinary basic science and translational research into the etiology and risk factors for preterm birth and to foster the training of scientists and clinical researchers.
- A robust and comprehensive national vital statistics system is required for better evaluation of the effect of prematurity on health. This system must include full utilization of the electronic birth certificate with common data elements and defi-

nitions among states and assurance of excellent data quality and consistency.

- The realization that there is a dramatic effect of race, ethnicity, and socioeconomic status on the incidence and severity of preterm birth must stimulate policymakers and funders to implement comprehensive and sustained efforts to eliminate social inequities in this area.
- Evidence-based interventions to prevent preterm birth should employ multidisciplinary approaches and encourage community engagement. Such interventions should be broadly implemented and evaluated in varying settings.
- Creating and evaluating quality measures of perinatal care are necessary to enhance prematurity prevention and clinical care.
- Access to insurance and quality health care throughout the life course is essential to assure optimal preconception, pregnancy, infant, and interconception care to prevent and mitigate the consequences of preterm birth.
- The Interagency Coordinating Council on Prematurity and Low Birthweight should be reactivated to monitor progress on this national action agenda and advise the Secretary of Health and Human Services and Congress about ongoing issues related to prematurity and its prevention.

The conference concluded with the request to the Surgeon General to make prevention of preterm birth a national public health priority, and recommendations from this conference will inform Congress to address the identification of the causes, risk factors, prevention, and treatment of preterm labor and delivery. Reaching this goal will require new resources to create broad-based research capacity, a vigorous national vital records system, multidisciplinary intervention programs, careful study of factors contributing to racial and ethnic disparities, reinvigorated health professional and consumer education programs, and access to high-quality preconception and perinatal health care for all Americans. However, several of the recommendations can be implemented in existing clinical care settings with modest resources, such as the development of quality improvement activities to monitor preterm birth rates and reduce elective inductions and cesarean deliveries before 39 weeks of gestation, employing clinical practices to accurately determine gestational age as early as possible, collecting data on birth outcome by race and ethnicity to identify disparities and implement locally specific methods to eliminate them, and estab-



lishing culturally competent, multidisciplinary clinical teams to provide comprehensive and integrated patient care addressing the importance of preconception care, early risk assessment, and active interventions to prevent preterm birth. This agenda is ambitious overall, but incremental approaches are possible, and the benefits to population health, control of expenditures, and enhanced work productivity will result in a sizeable return on this modest investment.

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