



# Expanding Maternal Morbidity & Mortality Research Within & Beyond our Hospital Walls

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# A Call to Action



*"We need to develop an organized, national approach focused on reducing maternal mortality and morbidity. The goal will be to outline a specific plan for clinical, educational, and research initiatives to put the 'M' back in maternal-fetal medicine."*

*D'Alton ME. Obstet Gynecol. 2010 Dec;116(6):1401-4.*

# SMFM 2012: Making a Plan 2018: Reviewing Progress

## OBSTETRICS

### Putting the “M” back in maternal–fetal medicine

Mary E. D’Alton, MD; Clarissa A. Bonanno, MD; Richard L. Berkowitz, MD; Haywood L. Brown, MD; Joshua A. Copel, MD; F. Gary Cunningham, MD; Thomas J. Garite, MD; Larry C. Gilstrap III, MD; William A. Grobman, MD, MBA; Gary D. V. Hankins, MD; John C. Hauth, MD; Brian K. Iriye, MD; George A. Macones, MD, MSCE; James N. Martin Jr, MD; Stephanie R. Martin, DO; M. Kathryn Menard, MD, MPH; Daniel F. O’Keefe, MD; Luis D. Pacheco, MD; Laura E. Riley, MD; George R. Saade, MD; Catherine Y. Spong, MD

## Clinical Opinion

### Putting the “M” back in maternal-fetal medicine: A 5-year report card on a collaborative effort to address maternal morbidity and mortality in the United States

Mary E. D’Alton, MD; Alexander M. Friedman, MD, MPH; Peter S. Bernstein, MD, MPH; Haywood L. Brown, MD; William M. Callaghan, MD, MPH; Steven L. Clark, MD; William A. Grobman, MD, MBA; Sarah J. Kilpatrick, MD, PhD; Daniel F. O’Keefe, MD; Douglas M. Montgomery, MD; Sindhu K. Srinivas, MD, MSCE; George D. Wendel, MD; Katharine D. Wenstrom, MD; Michael R. Foley, MD



# Recommendations to Close Critical Research Gaps

TABLE 3 Critical research gaps	
1. Developing standardized methods for national surveillance of maternal mortality and morbidity	
2. Defining significant maternal morbidity and “near misses”	
3. Prediction of patient’s risk of maternal mortality and severe morbidity	
4. Determining optimal timing of delivery to balance maternal, fetal, and neonatal risks	
5. Economic analyses to show benefit of maternal care, including interpregnancy and postdelivery care, as well as improvements in neonatal outcome	
6. Effectiveness of various approaches to improve training in maternal medicine	
7. Research on impact of adverse pregnancy outcomes on long-term maternal health	

*D’Alton. Putting the “M” back in MFM. Am J Obstet Gynecol 2013.*

1. Developing standardized methods for national surveillance of maternal mortality and morbidity

2. Defining significant maternal morbidity and “near misses”

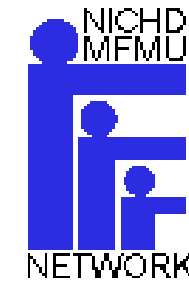
7. Research on impact of adverse pregnancy outcomes on long-term maternal health

In Progress



In Progress

# Research: NICHD MFM Units Network

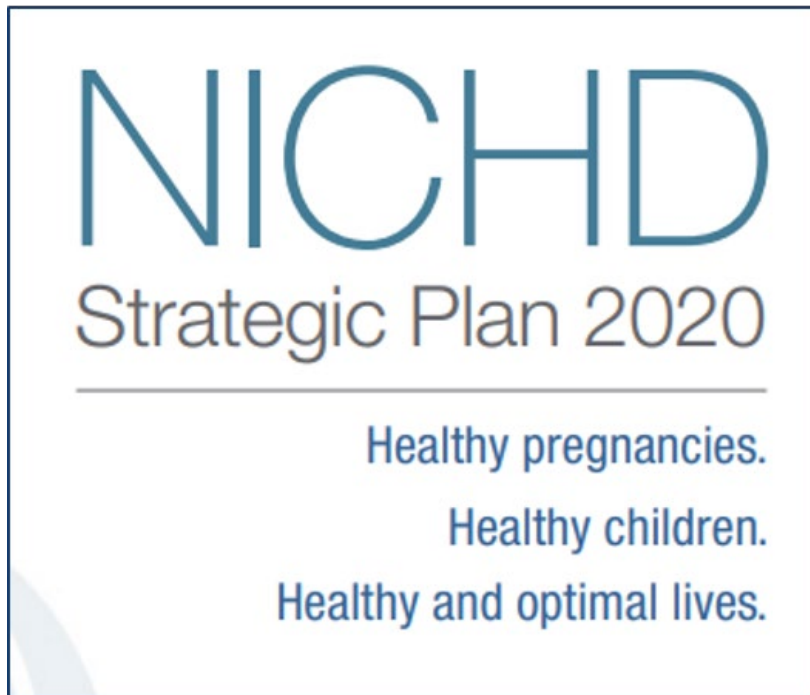


12 U.S. university-based clinical centers focus on clinical questions in MFM and obstetrics, in particular the continuing problem of preterm birth.

The Maternal Health category was added in 2017, and a Maternal Morbidity and Mortality category was added in 2019.



# Research: Impact of Adverse Pregnancy Outcomes on Long-Term Maternal Health



## Theme 3: Setting the Foundation for Healthy Pregnancies and Lifelong Wellness

Characterize pre-pregnancy and pregnancy factors that can raise the risk of adverse maternal conditions. Use emerging technologies and big data analytic methods, such as artificial intelligence, to integrate genomic, nutritional, social and behavioral, and exposure data to inform prevention efforts and address health disparities.

Develop targeted strategies to improve the prevention of and response to labor and delivery complications that lead to maternal morbidity and mortality. Extend studies of key adverse events to the postpartum period (“the fourth trimester”) to include hemorrhage, mental health conditions, and cardiovascular events, emphasizing populations affected by health disparities.

# Expanding Maternal Mortality & Morbidity Research WITHIN Our Hospital Walls

TABLE 3

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Improved Data Collection & Sharing

**Epic**

Optimal Timing of Delivery

Cost Effectiveness

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### Labor Induction versus Expectant Management in Low-Risk Nulliparous Women

William A. Grobman, M.D., Madeline M. Rice, Ph.D., Uma M. Reddy, M.D., M.P.H., Alan T.N. Tita, M.D., Ph.D., Robert M. Silver, M.D., Gail Mallett, R.N., M.S., C.C.R.C., Kim Hill, R.N., B.S.N., Elizabeth A. Thom, Ph.D., Yasser Y. El-Sayed, M.D., Annette Perez-Delboy, M.D., Dwight J. Rouse, M.D., George R. Saade, M.D., Kim A. Boggess, M.D., Suneet P. Chauhan, M.D., Jay D. Iams, M.D., Edward K. Chien, M.D., Brian M. Casey, M.D., Ronald S. Gibbs, M.D., Sindhu K. Srinivas, M.D., M.S.C.E., Geeta K. Swamy, M.D., Hyagriv N. Simhan, M.D., and George A. Macones, M.D., M.S.C.E., for the Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network\*

### The Cost of Elective Labor Induction in The MFMU ARRIVE Trial [19OP]

Brett D. Einerson, MD, MPH

University of Utah Health, on behalf of the NICHD MFMU, Salt Lake City, UT

# Expanding Maternal Mortality & Morbidity Research WITHIN Our Hospital Walls

TABLE 3

## Critical research gaps

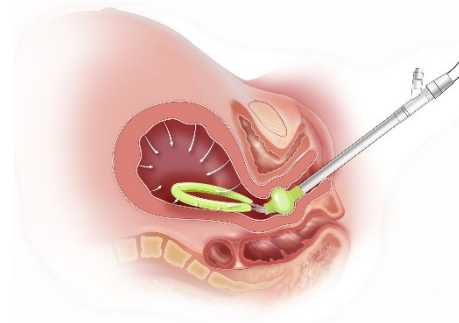
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Safety Bundle  
Implementation

Simulation

Intrapartum Innovations



## Maternal Safety Bundles

Maternal Early Warning  
Systems in Pregnancy  
(MEWS) [\[link\]](#)

Obstetric Hemorrhage

Severe Hypertension

Venous Thromboembolism

Maternal Sepsis [\[link\]](#)





# Expanding Maternal Mortality & Morbidity Research BEYOND Our Hospital Walls

TABLE 3

## Critical research gaps

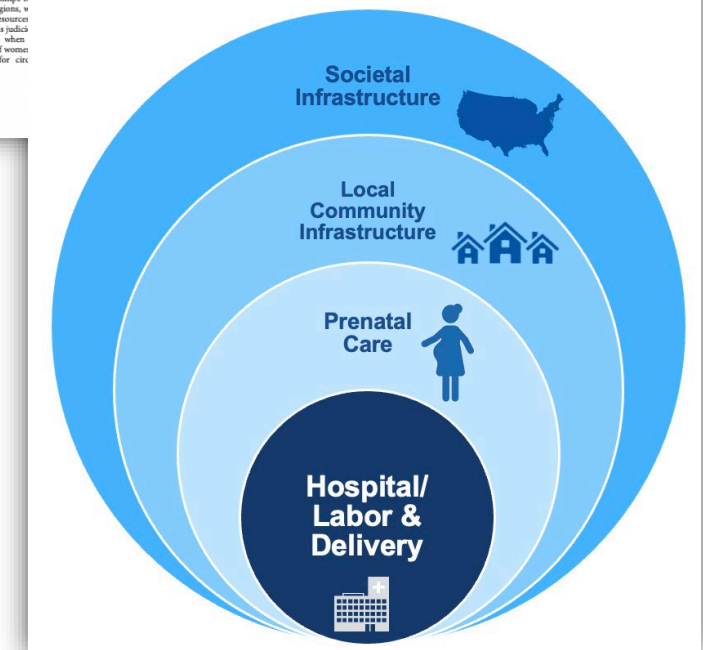
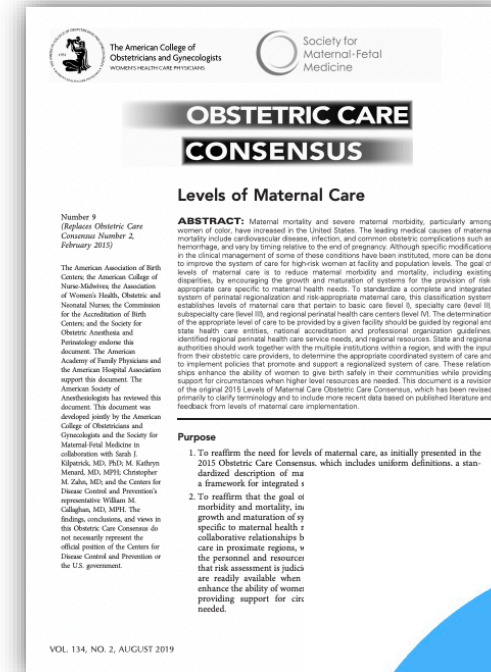
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Determining optimal timing of referral

Prediction of MM and SMM risk 1-2 years before pregnancy, looking at medical and social determinants of health factors

A population-based, observational cohort study



# Key Concepts for Moving Forward

- The continued relevance of the 2013 recommendations is both positive and negative
- Much more to do with improved data resources and new innovations
- Need to focus on effectiveness and implementation science
- Need to continue to expand the circles of relevant research and multidisciplinary collaboration





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