Infant Mortality Prevention: A Community and Public Health Approach

CAPT Wanda D. Barfield, MD, MPH
Director, Division of Reproductive Health

Secretary’s Advisory Committee on Infant Mortality
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Outline

• The problem of infant mortality - It’s not just about the baby

• Social determinants and maternal health

• CDC’s public health approach through community-based prevention efforts

• What we can do together to address infant mortality
U.S. Infant Mortality Rate 1950-2006


Healthy People Objective: 4.5

2010 Healthy People Objective: 6.7
The Contribution of Preterm Birth to the Infant Mortality Rate

• Preterm birth (< 37 weeks gestation) is the most frequent cause of infant death
  • 37% of all infant deaths (2005)

• 69% of deaths due to preterm birth within the first day

• 2/3 of deaths due to preterm birth occurred among infants ≤ 24 weeks gestation

Preterm Birth in U.S. by Race/Ethnicity
2006-2008 Average

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent live births &lt;37 weeks gestation</td>
<td>11.4</td>
<td>18.1</td>
<td>12.6</td>
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</tbody>
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Persistent Racial Disparity in U.S. Infant Mortality Rate
1950-2005

Deaths per 1,000 live births

- Total
- Black race
- White
Social Determinants of Health

• What are they?
  • Conditions under which individuals are born, grow, live, work, and age

• What about resources?
  • Economics, social policies, and politics impact health inequity

• How are they defined?
  • WHO’s 3 recommendations:
    • 1. Improve daily life
    • 2. Address inequity in quality of life
    • 3. Measure and assess impact of policies and programs and how they motivate change

Social Determinants of Health (Cont’d)

- How do we get impact?
  - Assessment of the true impact of policy change is necessary
  - Evaluation of focused interventions and use of evidence-based interventions will inform states, localities, and agencies

- How is it measured?
  - It is possible to examine individual-level data linked to surveillance data
  - The life course perspective is integral to this concept
Social Determinants: The Circle of Influences

Social Determinants: Influence on the Fetus and Infant
CDC's Safe Motherhood: Rationale

- Approximately six million women become pregnant in the US each year.
- Safeguarding the Health of Mothers by
  - Improving women’s health before, during, and after pregnancy
  - Identifying strategies that could reduce maternal and infant deaths in the US.
NCCDPHP Action Areas

Public Health Infrastructure
- Surveillance
- Applied research
- Capacity building /workforce

Healthy Communities
- Tobacco control
- Nutrition and physical activity
- Child and adolescent health
- Oral health
- Sexual health

Healthy Care Environments
- Promote delivery of clinical preventive services
- Chronic disease management
- Healthy schools and work environments
Factors that Affect Health

- Counseling and Education
- Clinical Interventions
- Long-Term Interventions
- Policy
- Socio-economic factors

Frieden TR. A framework for public health impact: The health impact pyramid. AJPH 2009
CDC Working With Communities

- Racial/Ethnic Approaches to Community Health
- ACHIEVE Communities
- Strategic Alliance for Health
- Prevention Research Centers
- Communities Putting Prevention to Work
- Community Transformation Grants
- Chronic Disease Consolidation Grants
Improving Social Determinants in Maternal Health: Examples
Reaching Communities to Improve Maternal Social Determinants

- Reducing CVD risk among women accessing reproductive health services in Eastern North Carolina
  - Evaluating screening for 5 risk factors (diabetes, high cholesterol, high blood pressure, obesity, smoking) at contraceptive visits
  - Evaluating a lifestyle and weight loss intervention

- Healthy African American Families (HAAF) project in Los Angeles, community participatory project
  - Target interventions to support women during pregnancy
  - 100 Acts of Kindness
Family: The Original Team Sport!
Reaching Communities to Improve Maternal Social Determinants

• Randomized trial to evaluate a contingency management approach to weight loss and smoking cessation among American Indian women of reproductive age
• Evaluation of state tobacco control policies, spending, and taxes on smoking before, during and after pregnancy and on birth outcomes
• Assessing Medicaid coverage of smoking cessation services
Late-Preterm Infants

ABSTRACT: Late-preterm infants (defined as infants born between 34 weeks and 36 weeks of gestation) often are mistakenly believed to be as physiologically and metabolically mature as term infants. However, compared with term infants, late-preterm infants are at higher risk than term infants of developing medical complications, resulting in higher rates of infant mortality, higher rates of morbidity before initial hospital discharge, and higher rates of hospital readmission in the first months of life. Preterm delivery should not be induced upon an expedient maternal or fetal indication for delivery except in circumstances where induction is necessary to save the life of the mother or the child. This Practice Bulletin was developed by the ACOG Committee on Practice Bulletins—Obstetrics with the assistance of Mildred Ramirez, MD, and Susan Romans, MD. The information is designed to aid practitioners in making decisions about appropriate obstetric and gynecologic care. These guidelines should not be construed as dictating an exclusive course of treatment or procedure. Variations in practice may be warranted based on the circumstances of each case and should be made on the basis of factors best known and judged to be relevant to each individual case.

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
Postpartum Screening for Abnormal Glucose Tolerance in Women Who Had Gestational Diabetes Mellitus

Postpartum Screening for Diabetes After a Gestational Diabetes Mellitus–Affected Pregnancy

Preventing type 2 diabetes: public health implications for women with a history of gestational diabetes mellitus

Objective: To estimate trends in postpartum glucose tolerance tests after a gestational diabetes mellitus (GDM) diagnosis. From 2004 to 2006, practice site where the women received care was the factor most strongly associated with the clinician order, but it
Provision of Risk-Appropriate Care

Evidence: risk of death at non-level III facilities

- VLBW (≤ 500g) infants (37 studies)
  - OR 1.62, 95% CI 1.44-1.83
- ELBW (≤1000g) infants (4 studies)
  - OR 1.64, 95% CI 1.14-2.36
- Very Preterm (≤32 weeks) infants (4 studies)
  - OR 1.55, 95% CI 1.21, 1.98

Policy: States regulate health care services and facilities

- License hospitals
- Promulgate State Health Plans/Regulations
- Approve facility expansion and construction
- Implement Title V programs ($)

Lasswell JAMA 2010; J Perinatol 2009
HRSA/MCHB Performance Measure #17: Percent of VLBW Infants Delivered at Facilities for High Risk Deliveries and Neonates by State

Above 2010 target
Below 2010 target
More than 20% below 2010 target
Data not available

*Goal: 90%
Long-Acting Reversible Contraception: Implants and Intrauterine Devices

Intrauterine devices and contraceptive implants, also called long-acting reversible contraceptives (LARC), are the most effective reversible contraceptives. The major advantage of LARC compared with other reversible contraceptive methods is that they do not require ongoing effort on the part of the user for long-term and effective use. In addition, return of fertility is rapid after the removal of the device (1, 2). The purpose of this Practice Bulletin is to provide information for appropriate candidate selection and the management of clinical issues and complications associated with LARC use.
Measuring Impact: CDC's Pregnancy Risk Assessment Monitoring System (PRAMS)

- **Louisiana:** Analysis of PRAMS and birth certificate data to identify associations between preterm birth and modifiable risks
  - Implementation of “The Stork Reality” Project

- **Military and Civilian Births***: Measuring the effect of military affiliation on preterm birth
  - Assessed demographics, SES, health risks, stress, prenatal care, and delivery history
  - Military affiliation reduced early preterm birth for African Americans by 41%; no difference for late preterm birth
  - No difference in military affiliation on preterm birth for whites

*www.cdc.gov/prams*

*Lundquist J. Under review*
Data Linkage to Assess Social Determinants

- Pregnancy Risk Assessment Monitoring System (PELL)
  - Vital records data
  - Hospital discharge data
  - PRAMS
  - Early Intervention Program
  - Women Infants and Children
  - Assisted Reproductive Technology data
  - Area resource data
  - Healthy Start

- Quality Improvement Collaboratives
Quality Improvement Collaboratives

The denominator is the number of scheduled deliveries 36 to 38 weeks gestation (number of scheduled delivery forms submitted). The numerator is the number of scheduled deliveries without indication documented.

Percent of scheduled deliveries at 36\(^{0/7}\) - 38\(^{6/7}\) weeks without medical or obstetric indication documented.

Sudden Unexpected Infant Deaths (SUID): SIDS and Other Causes, 1990-2005

Year

Rate per 100,000 livebirths

SIDS
Accidental suffocation in bed and "unknown"
Combined SUID

Source: CDC WONDER, Mortality Files
Building Capacity in Communities: Maternal and Child Health Epidemiology Program

- MCHEP initiated in 1986 by the Centers for Disease Control and Prevention, and the Health Resources and Services Administration / Maternal and Child Health Bureau
- Request for Applications provide:
  - Direct assistance to states
  - Time-limited assignments
- Envisioned as a mechanism to promote collaboration between federal agencies and states
- 35+ senior MCH epidemiologists to more than 33 states and 6 other public health organizations
MCHEP Sponsored Regions, States, and Public Health Agencies
SUMMARY

• The problem of infant mortality—It’s not just about the baby
• Social determinants and maternal health matter to reduce infant deaths and disparities
• Integrative prevention research in communities is needed to assess social determinants
• Sustain gains made thus far
• Utilize broad data systems to measure impacts
• Increase and diversify the public health workforce
Questions?

Wanda D. Barfield, MD, MPH.
CAPT, U.S. Public Health Service
Director, Division of Reproductive Health
National Center for Chronic Disease Prevention
and Health Promotion
Centers for Disease Control and Prevention
(770) 488-5200 (770)488-6450 (fax)
drhinfo@cdc.gov
http://www.cdc.gov/reproductivehealth/

Healthy Reproduction for a Healthy Future