Infant Mortality in the US: Where We Stand

CAPT Wanda D. Barfield, MD, MPH, FAAP
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National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention
A Tale of Two Babies

1963


2001
What is Infant Mortality?

- The death of a live-born infant before his/her first birthday
  - Neonatal period: 0 - 27 days
  - Postneonatal period: 28 - 364 days
- The largest component of childhood mortality
- A major indicator of societal health and well-being

67% Neonatal
33% Postneonatal

Neonatal (<28 days)
- Drivers:
  - Preterm
  - Birth defects
  - Maternal health conditions
  - Lack of access to risk-appropriate care

Postneonatal (28-364 days)
- Drivers:
  - Sudden unexpected infant death (SUID)/Sudden infant death syndrome (SIDS)
  - Injury
  - Infection

National Center for Health Statistics, National Vital Statistics Reports, 2011

Percent of Deaths per 1,000 live births

Year


Total

Black, Non-Hispanic

White, Non-Hispanic

National Center for Health Statistics, National Vital Statistics Reports
Trends: Birth Weight-Specific Neonatal Mortality

Percent mortality

- 1950
- 1985
- 2008

National Center for Health Statistics
Trends: Birth Weight Distribution

Percent of live births

1950
1985
2009

National Center for Health Statistics
Infant Mortality Rates, OECD Countries, 2008

Rate per 1,000 live births

United States: 6.6
Slovak Republic: 5.9
Poland: 5.6
Hungary: 5.6
Canada: 5.1
New Zealand: 5.0
United Kingdom: 4.7
Austria: 4.1
Belgium: 4.0
Belgium: 4.0
France: 3.8
Ireland: 3.8
Israel: 3.8
Netherlands: 3.7
Republic of Korea: 3.7
Austria: 3.6
Finland: 3.6
Greece: 3.5
Iceland: 3.5
Czech Republic: 3.5
Denmark: 3.5
Portugal: 3.3
Spain: 3.3
Italy: 2.8
Germany: 2.8
Norway: 2.7
Sweden: 2.6
Japan: 2.6
Finland: 2.5
Iceland: 2.5

Health, United States, 2011
OECD: Organization for Economic Cooperation and Development
Infant Mortality Rate, 2006-2008

National Center for Health Statistics
# Underlying Causes of Infant Death in the US, 2008

## NEONATAL

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Percentage of total deaths (in specified group)</th>
<th>Mortality rate (per 100,000 live births in specified group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disorders related to short gestation and low birth weight, not elsewhere classified</td>
<td>25.4%</td>
<td>109.0</td>
</tr>
<tr>
<td>Congenital malformations, deformations and chromosomal anomalies</td>
<td>21.7%</td>
<td>93.1</td>
</tr>
<tr>
<td>Maternal complications of pregnancy</td>
<td>9.6%</td>
<td>41.0</td>
</tr>
<tr>
<td>Complications of placenta, cord and membranes</td>
<td>5.9%</td>
<td>25.1</td>
</tr>
<tr>
<td>Bacterial sepsis</td>
<td>3.7%</td>
<td>15.9</td>
</tr>
</tbody>
</table>

## POSTNEONATAL

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Percentage of total deaths (in specified group)</th>
<th>Mortality rate (per 100,000 live births in specified group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudden infant death syndrome</td>
<td>21.7%</td>
<td>50.4</td>
</tr>
<tr>
<td>Congenital malformations, deformations and chromosomal anomalies</td>
<td>15.6%</td>
<td>39.6</td>
</tr>
<tr>
<td>Unintentional injuries</td>
<td>12.0%</td>
<td>27.9</td>
</tr>
<tr>
<td>Diseases of the circulatory system</td>
<td>4.9%</td>
<td>11.5</td>
</tr>
<tr>
<td>Gastritis, duodenitis, and non-infective enteritis and colitis</td>
<td>3.4%</td>
<td>7.9</td>
</tr>
</tbody>
</table>

*ICD-10 codes grouped by modified Dolfus classification scheme

http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_06.pdf
Contribution of Preterm Birth to U.S. Infant Mortality


Births

- <32: 9%
- 32-33: 87%
- 34-36: 32%
- ≥37: 10%

Infant Deaths

- <32: 54%
- 32-33: 32%
- 34-36: 10%
- ≥37: 9%

National Center for Health Statistics, linked birth/infant death data set
U.S. Infant Mortality Rates for Selected Causes of Death for Non-Hispanic Black and Non-Hispanic White Women

- Preterm-related causes: Non-Hispanic black (599), Non-Hispanic white (178)
- Congenital malformations: Non-Hispanic black (165), Non-Hispanic white (124)
- SIDS: Non-Hispanic black (108), Non-Hispanic white (58)
- Unintentional injuries: Non-Hispanic black (61), Non-Hispanic white (30)

CDC/National Center for Health Statistics, linked birth/infant death data set, 2007
Contribution of Preterm Birth to the U.S. Infant Mortality Rate

- The tiniest babies bear the biggest burden
  - More than 50% of infant deaths occur among infants 32 weeks gestation or younger

- Annual societal economic burden
  - $26.2 billion (2005)

- Major contributor to poor international rankings
  - US ranks 130 of 184 in preterm births
Meta-analysis of 30 years of data on perinatal regionalization (104,944 VLBW infants)

Odds of death at non-level III facilities

- Infants weighing ≤1500g
  - OR 1.62 (95% CI 1.44 - 1.83)
- Infants weighing ≤1000g
  - OR 1.64 (95% CI 1.14 - 2.36)
- Infants born ≤32 weeks
  - OR 1.55 (95% CI 1.21 - 1.98)

In the US, many of these infants are not delivered in level III facilities

Lasswell SM, Barfield WD, Rochat RW. Perinatal regionalization for very low-birthweight and very preterm infants: a meta-analysis. JAMA 2010 Sept 1;304(9)

VLBW: very low birthweight
Contribution of Cigarette Smoking to Infant Mortality

- Prenatal smoking occurs in 11.5% of all U.S. live births
- Smoking in pregnancy accounts for
  - 5%-8% of preterm deliveries
  - 13%-19% of low birth weight among term infants
  - 23%-34% of deaths due to SIDS
  - 5%-7% of deaths from preterm-related causes
- Potentially preventable

Five Current National Strategies for Infant Mortality Reduction

- Prevention of Elective Deliveries < 39 weeks
- SIDS/SUID Risk Reduction
- Perinatal Regionalization
- Smoking Cessation in Pregnancy
- Preconception and Interconception Care
Circle of Influences on Fetal and Infant Health
Pregnancy Risk Assessment Monitoring System (PRAMS): Using Data to Reduce Infant Deaths

Denise D’Angelo, MPH
Health Scientist, Division of Reproductive Health
National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention
PRAMS Overview

- Population-based surveillance system
- Self-reported maternal behaviors and experiences around the time of pregnancy
- Supplements birth certificate information
- State and near-national estimates
PRAMS Background and Goals

- Established in 1987 as part of an Infant Health Initiative
- Congressional funding provided to CDC to establish state-based programs
- Reduce maternal and infant morbidity and mortality
  - Maternal and infant health programs
  - Health policies
  - Maternal behaviors
Who Participates in the PRAMS Surveys?

- Women who recently delivered a live infant
  - Random sample from birth certificate records
  - Women are sampled when infants are 2 - 6 months old
  - State sample ~1500–3000 women per year
  - 40 states and NYC (combined annual sample ~ 77,000)
Representative Sample

Population → Frame → Sample → Respondents

Coverage Weight

Sampling Weight

Response Weight
PRAMS Participation, 2012

PRAMS represents approximately 78% of all U.S. live births
PRAMS Surveys

- Data collection primarily by mailed paper survey
- Survey booklets are 14 pages and around 85 questions in length
- Telephone follow-up
- Takes 20 - 30 minutes to complete
Selected PRAMS Survey Topics

- Breastfeeding
- Cigarette smoking during pregnancy
- Contraceptive use
- HIV counseling and testing
- Infant Sleep Position
- Influenza vaccination
- Medicaid and WIC participation
- Multivitamin use
- Physical abuse
- Preconception health
- Prenatal care
- Unintended pregnancy
Smoking During Pregnancy, 26 PRAMS Sites

Percent

States

Overall AK AR CO DE GA HI ME MD MA MN MO NE NJ NY

NYC OH OK OR PA RI TX UT VA WA WV WY

Pregnancy Risk Assessment Monitoring System, 2010
Smoking During Pregnancy, by Race and Age

**Race**

- White
- Black
- Hispanic
- Other

**Age**

- <=19
- 20-34
- ≥35

Pregnancy Risk Assessment Monitoring System, 2010
“I smoked a lot while pregnant with my daughter. As a result, she was born 6 weeks premature and weighed 3 lbs 6 oz. She stayed in the hospital for a month. People really don’t think smoking effects pregnancy, but it does (in) so many ways. I wish there was a way to stress to people the importance of NOT SMOKING!!”

» PRAMS respondent
Infants Placed to Sleep on Back

Pregnancy Risk Assessment Monitoring System, 2010
Back Sleep Position, by Race and Age

Race

- White
- Black
- Hispanic
- Other

Age

- <=19
- 20-34
- ≥35

Pregnancy Risk Assessment Monitoring System, 2010
Infant Bed Sharing at 14 Sites

Pregnancy Risk Assessment Monitoring System, 2010
Infant Bed Sharing, by Race and Age

Race

- White
- Black
- Hispanic
- Other

Age

- <=19
- 20-34
- ≥35

Pregnancy Risk Assessment Monitoring System, 2010
Impact of PRAMS Data on Smoking in West Virginia

- “Tobacco Free Pregnancy Initiative” launched in 2009
- Initiative officially introduced by governor
  - Community grants available for tobacco cessation services
  - “Tobacco Free for Baby and Me” program
    (Women’s and Children’s Hospital)
  - “Day One” program offered at delivery hospitals
    (Healthcare Education Foundation)
  - Free tobacco cessation counseling training for healthcare providers (Marshall University School of Medicine)
In the first 6 weeks of the media campaign:

- 2,355 calls were made to the Quitline
- 500 callers enrolled in a tobacco cessation program
  - 48% of these enrollees had seen media materials from the Tobacco Free Pregnancy Initiative
  - 20% of these callers were pregnant women and their families
Impact of PRAMS on Safe Sleep in Michigan

- From PRAMS data:
  - Back to sleep position 20% lower among blacks
  - Younger, less educated women more likely to bed share

- In 2004, Tomorrow’s Child and the Michigan Department of Health launched the Infant Safe Sleep Campaign
  - Endorsed by the governor
MI Infant Safe Sleep Campaign: Recommendations and Policy Actions

- Developed unified infant safe sleep recommendations
- Integrated Infant Safe Sleep message into existing programs and services of the state health department
- Set standards of care, policies, and procedures for hospitals, health plans, and state agencies
- Required adherence to Safe Sleep recommendations as a condition of licensure for child care centers
- Distributed consumer materials with consistent Safe Sleep messages

www.michigan.gov/dhs/0,4562,7-124-5453_7124_57836--,00.html
Data Linkages

Indirect linkages

Direct linkages

Live birth certificates – intermediate files

PRAMS

Hospital Discharge

WIC

Newborn Screening

Infant Deaths

SIDS/SUID Registry

ART

Birth Defects

Medicaid

Live Birth Certificates

ART: Assisted Reproductive Technology

WIC: Special Supplemental Nutrition Program for Women, Infants and Children

PRAMS Information

www.cdc.gov/prams/
www.cdc.gov/prams/cponder.htm
Preventing Sudden and Unexpected Infant Death: From “Back to Sleep” to “Safe to Sleep”

Rachel Y. Moon, MD FAAP
American Academy of Pediatrics
Scope of the Problem

- **Sudden and unexpected infant death** (SUID)
  - Also called sudden and unexpected death in infancy (SUDI)
  - Accounts for ~4500 U.S. deaths annually

- **Most occur during sleep** (sleep-related deaths)
  - Accidental suffocation and strangulation in bed (ASSB)
  - Ill-defined
  - Sudden infant death syndrome (SIDS)

- **SIDS comprises one-half of SUID deaths**
  - No cause found after autopsy, death scene investigation, review of clinical history
  - Leading cause of postneonatal mortality (1 month - 1 year)
Rates of SIDS and SUID

Proportion of Post-neonatal Deaths, US: 1995-2005

Deaths per 100,000 Live Births

Year


ASSB
Ill-defined
SIDS

CDC Wonder, 2011

- All race and ethnic origin:
  - 1996: 78.5
  - 2006: 54.5

- Non-Hispanic white:
  - 1996: 69.4
  - 2006: 55.6

- Non-Hispanic black:
  - 1996: 155.3
  - 2006: 103.8

- American Indian and Alaska Native:
  - 1996: 203.3
  - 2006: 119.4

- Asian and Pacific Islander:
  - 1996: 44.0
  - 2006: 22.8

- Hispanic:
  - 1996: 48.3
  - 2006: 27.0

Pediatrics. 2011;128

The figure does not meet standards of reliability or precision on the basis of fewer than 20 deaths in the numerator.

ASSB: accidental strangulation and suffocation in bed

Pediatrics. 2011;128

The figure does not meet standards of reliability or precision on the basis of fewer than 20 deaths in the numerator.
Comparison of U.S. Rates of Cause Ill-Defined or Unspecified Death by Maternal Race and Ethnic Origin, 1996 and 2006

The figure does not meet standards of reliability or precision on the basis of fewer than 20 deaths in the numerator.
Possible Explanations for Racial Disparities in Sleep-Related Infant Deaths

- **Biological differences**
  - Example: nicotine metabolism

- **Behavioral differences**
  - Sleep position
  - Bedsharing
  - Use of soft bedding
  - Breastfeeding
  - Smoke exposure
Prone Sleep Prevalence, by Race and Ethnicity

Established Risk Factors for Sleep-Related Deaths

- **Side or prone position (OR 2.3-13.1)**
- **Bedsharing (OR 2.88): risk increases with**
  - Smoker parent (OR 2.3-17.7)
  - Infant <3 months (OR 4.7-10.4), regardless of parental smoking status
  - Soft surfaces e.g. couches, armchairs (OR 5.1-66.9)
  - Soft bedding (OR 2.8-4.1)
  - Multiple bedsharers (OR 5.4)
  - Parent consumed alcohol, drugs, or is overtired (OR 1.66)
- **Soft bedding (OR 5.0; + prone = 21.0)**
- **Smoke exposure (prenatal + postnatal)**
- **Prenatal drug and alcohol use (OR varies, >3.0)**

OR: odds ratio
Protective Factors for Sleep-Related Deaths

- Roomsharing without bedsharing (OR 0.5)
- Breastfeeding: ever (OR 0.4), any exclusive (OR 0.27)
- Pacifier use (OR 0.39)
- Immunizations (OR 0.5)

OR: odds ratio
Level A AAP Recommendations for Reducing the Risk of SIDS

❖ Based on good and consistent scientific evidence
  ➢ Back to sleep for every sleep
  ➢ Use a firm sleep surface
  ➢ Room-sharing without bed-sharing is recommended
  ➢ Keep soft objects and loose bedding out of the crib
  ➢ Pregnant women should receive regular prenatal care
  ➢ Avoid smoke exposure during pregnancy and after birth
  ➢ Avoid alcohol and illicit drug use during pregnancy and after birth
  ➢ Breastfeeding is recommended

Pediatrics. 2011; 128(5)
Based on good and consistent scientific evidence

- Consider offering a pacifier at nap time and bedtime
- Avoid overheating
- Do not use home cardiorespiratory monitors as a strategy for reducing the risk of SIDS
- Expand the national campaign to reduce the risks of SIDS to include a major focus on the safe sleep environment and ways to reduce the risks of all sleep-related infant deaths, including SIDS, suffocation, and other accidental deaths; pediatricians, family physicians, and other primary care providers should actively participate in this campaign

Pediatrics. 2011; 128(5)
Level B AAP Recommendations for Reducing the Risk of SIDS

Based on limited or inconsistent scientific evidence

- Infants should be immunized in accordance with recommendations of the AAP and Centers for Disease Control and Prevention
- Avoid commercial devices marketed to reduce the risk of SIDS
- Supervised, awake tummy time is recommended to facilitate development and to minimize development of positional plagiocephaly

Pediatrics. 2011; 128(5)
Level C AAP Recommendations for Reducing the Risk of SIDS

Based primarily on consensus and expert opinion

- Health care professionals, staff in newborn nurseries and NICUs, and child care providers should endorse the SIDS risk-reduction recommendations from birth
- Media and manufacturers should follow safe-sleep guidelines in their messaging and advertising
- Continue research and surveillance on the risk factors, causes, and pathophysiological mechanisms of SIDS and other sleep-related infant deaths, with the ultimate goal of eliminating these deaths entirely

Pediatrics. 2011; 128(5)
Relevant National Initiatives

- **Cribs for Kids**
  - >300 partners nationally
  - Provide low-cost portable cribs to organizations, who then provide them free or at cost to parents who cannot afford a crib

- **ABCs**
  - Alone, on your Back, in a Crib
  - Baltimore City Health Department and others

- **Safe to Sleep**
  - NICHD-led public awareness campaign
  - Expands focus from back sleeping only to ALL of the components of a safe sleep environment (position, bedding, bedsharing, sleep surface, etc.)

NICHD: National Institute for Child Health and Development
Role of Health Professionals

- **Patient and community education**
  - Need to understand what the barriers are (misconceptions, financial barriers, etc.)
  - Need to increase parental self-efficacy
  - Need to explain how recommendations work

- **Modeling of safe sleep behaviors**
  - Doctors and nurses
  - “Do as I say, not as I do”

- **Monitoring of media**
Portrayals of Unsafe Sleep Practices
Toward A National Strategy on Infant Mortality

Michael C. Lu, MD, MPH
Associate Administrator
Maternal and Child Health Bureau
Health Resources and Services Administration
And where infant mortality has taken the highest toll in the US, we’re also partnering with state officials to create strategies and interventions to begin bringing these rates down. Our plan is to find out what works and scale up the best interventions to the national level.

And today I’m pleased to announce my department will be collaborating in the next year to create our nation’s first ever national strategy to address infant mortality.

**Secretary Kathleen Sebelius**

*Child Survival: Call to Action*  
*June 14, 2012*
# Major National Initiatives to Reduce Infant Mortality

<table>
<thead>
<tr>
<th>Lead Organization</th>
<th>Initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Congress of Obstetricians and Gynecologists</td>
<td>reVITALize Conference</td>
</tr>
<tr>
<td>Association of Maternal and Child Health Programs</td>
<td>Forging a Comprehensive Initiative to Improve Birth Outcomes and Reduce Infant Mortality</td>
</tr>
<tr>
<td>Association of State and Territorial Health Officials</td>
<td>ASTHO Presidential Challenge and Healthy Babies Initiative</td>
</tr>
<tr>
<td>Association of Women’s Health, Obstetric and Neonatal Nurses</td>
<td>Go for the Full Forty Initiative</td>
</tr>
<tr>
<td>Centers for Disease Control and Prevention</td>
<td>Preconception Care Workgroup and Select Panel on Preconception Care</td>
</tr>
<tr>
<td>Centers for Medicaid and Medicare Innovation</td>
<td>Strong Start Initiative</td>
</tr>
<tr>
<td>Centers for Medicaid and Medicare Services</td>
<td>CMCS Expert Panel on Improving Maternal and Infant Outcomes</td>
</tr>
<tr>
<td>Health Resources and Services Administration</td>
<td>Collaborative Improvement and Innovation Network to Reduce Infant Mortality</td>
</tr>
<tr>
<td>March of Dimes</td>
<td>Healthy Babies are Worth the Wait Initiative</td>
</tr>
<tr>
<td>National Priorities Partnership- National Quality Forum</td>
<td>Maternity Action Team</td>
</tr>
</tbody>
</table>
Infant Mortality Rate in the US

IMR per 1,000 live births

- Actual IMR
- Projected IMR
- HP 2020

IMR: infant mortality rate
HP: Healthy People
Secretary’s Advisory Committee on Infant Mortality (SACIM): Charge and Purpose

- Advises the Secretary on DHHS activities and programs that are directed at reducing infant mortality and improving the health status of pregnant women and infants
- Provides guidance and attention on the policies and resources required to reduce infant mortality
- Provides advice on how to coordinate the variety of federal, state, local and private programs and efforts that are designed to deal with the health and social problems impacting on infant mortality
SACIM
Priorities for National Strategy on Infant Mortality

- Improve women’s health before pregnancy
- Promote quality and safety along the continuum of perinatal healthcare
- Invest in prevention and health promotion
- Promote service coordination and systems integration
- Strengthen surveillance and support research
- Promote interagency, public-private, and multi-disciplinary collaboration
Preconception Health and Healthcare

- CDC/ATSDR Preconception Care Work Group and Select Panel on Preconception Care
- Office of Minority Health Preconception Peer Educators
- CMS Expert Panel on Interconception Care
- Affordable Care Act
  - Clinical preventive services coverage for women outside of pregnancy, without co-pays (effective August 2012)
- Recognition that prenatal care is necessary but not sufficient for improved pregnancy outcomes
Priorities for National Strategy on Infant Mortality

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Opportunities for Quality Improvement

- Reduce elective delivery < 39 weeks
  - ASTHO/March of Dimes
  - CMMI
  - HRSA
  - National Governors’ Association
  - National Priorities Partnership

- Promote appropriate use of 17 Alpha-hydroxyprogesterone (17P) to prevent premature deliveries

- Improve screening for asymptomatic bacteriuria and GBS

- Reduce central-line associated bloodstream infections in newborns

GBS: Group B Streptococcus
CMMI: Center for Medicare and Medicaid Innovation
Ohio Perinatal Quality Collaborative: Real Decrease in Elective Late Preterm Deliveries

SACIM
Priorities for National Strategy on Infant Mortality

- Improve women’s health before pregnancy
- Promote quality and safety along the continuum of perinatal healthcare
- **Invest in prevention and health promotion**
- Promote service coordination and systems integration
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Opportunities for Prevention and Promotion

- Missed opportunities
  - Smoking cessation
  - Safe Sleep
  - Breastfeeding
  - Immunization
  - Family planning

- New Workforce
  - Health educator
  - Home visiting nurse
  - Community health worker or doula

- New Platform
  - Group prenatal care

- New Technologies
  - Social media
Priorities for National Strategy on Infant Mortality

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- Promote service coordination and systems integration
- Strengthen surveillance and support research
- Promote interagency, public-private, and multidisciplinary collaboration
Strengthen Systems Integration

- **Vertical integration**
  - Appropriate levels of care

- **Horizontal integration**
  - Service coordination and systems navigation

- **Longitudinal integration**
  - Care continuum across the life course

- **Examples**
  - Perinatal Regionalization; making sure that high-risk babies are born where they can be best cared for medically
  - Maternal, Infant, and Early Childhood Home Visiting Program
  - Maternity Medical Home, Birthing Centers
  - Navigator, community accountable care systems
Priorities for National Strategy on Infant Mortality

- Improve women’s health before pregnancy
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Surveillance and Research

- **Strengthen surveillance**
  - Standardize vital records
  - Improve data linkage capacity
  - Promote quality improvement using real-time data

- **Support translational disparities research**
  - T1 to T2 (basic science to clinic)
  - T2 to T3 (clinic to community)
  - T3 to T4 (community to policy)
SACIM
Priorities for National Strategy on Infant Mortality

- Improve women’s health before pregnancy
- Promote quality and safety along the continuum of perinatal healthcare
- Invest in prevention and health promotion
- Promote service coordination and systems integration
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Collaborative Improvement and Innovation Network (COIN) to Reduce Infant Mortality

- Partnership established among HRSA, ASTHO, AMCHP, CDC, CityMatCH, CMS, March of Dimes, NGA, NPP, and the states
- Began in the 13 southern states in January 2012
- States developed their own state plans to reduce infant mortality

Gloor, PA. Swarm Creativity: Competitive Advantage through Collaborative Innovation Networks, 2006
5 Strategy Teams

- Reducing elective deliveries <39 weeks
- Expanding interconception care in Medicaid
- Reducing SIDS/SUID
- Increasing smoking cessation among pregnant women
- Enhancing perinatal regionalization

Teams

- 2 - 3 Leads (Content Experts)
- Method experts
- Data experts
- Shared workspace
- Data dashboard
By December 2013:
- Reduce elective delivery < 39 weeks by 33%
- Reduce smoking rate among pregnant women by 3%
- Increase safe sleep practices by 5%
- Increase mothers delivering at appropriate facilities by 20%
- Change Medicaid policy and procedures around interconception care in at least 5 - 8 states
Health Equity

- **Overarching goal of the national strategy**
  - Need aspirational goal for the infant mortality gap

- **Life-Course Perspective as a Guiding Framework**
  - Place-based initiatives working across multiple sectors
  - Policy changes (e.g. inclusion of anti-poverty programs such as TANF reauthorization as part of the national strategy to address infant mortality)

TANF: Temporary Assistance to Needy Families
Closing the Gap
Public Health Approaches to Reducing U.S. Infant Mortality

- **Infant Mortality in the US: Where We Stand**
  
  *Wanda Barfield, MD, MPH, FAAP*, Captain, U.S. Public Health Service, Director, Division of Reproductive Health, Centers for Disease Control and Prevention

- **PRAMS: Using Data to Reduce Infant Deaths**
  
  *Denise D’Angelo, MPH*, Health Scientist, Division of Reproductive Health, Applied Sciences Branch, PRAMS Team Centers for Disease Control and Prevention

- **Preventing Sudden and Unexpected Infant Death: From “Back to Sleep” to “Safe to Sleep”**
  
  *Rachel Moon, MD, FAAP*, American Academy of Pediatrics

- **Toward a National Strategy on Infant Mortality**
  
  *Michael C. Lu, MD, MS, MPH*, Associate Administrator, Maternal and Child Health, Health Resources and Services Administration