

# Efforts to Reduce Infant Mortality



National Center on Birth Defects and Developmental Disabilities (NCBDDD)  
Centers for Disease Control and Prevention

June 2021

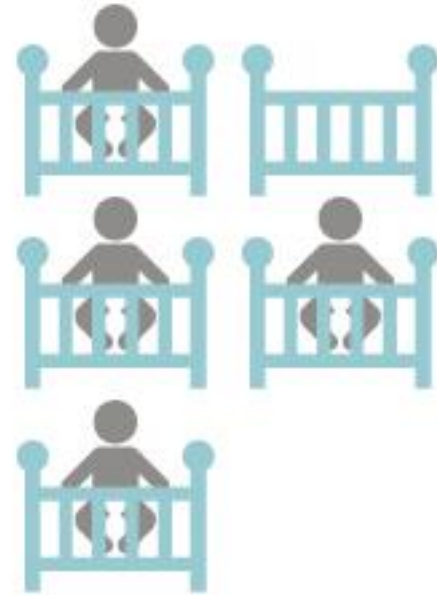


# What is DBDID Doing to Address Infant Mortality?

- Preventing birth defects
- Reducing use of alcohol, other substances, and teratogenic medications during pregnancy
- Monitoring emerging threats and their impact on infants
- Monitoring and understanding risk factors for fetal death

# Impact of Birth Defects on Infant Mortality

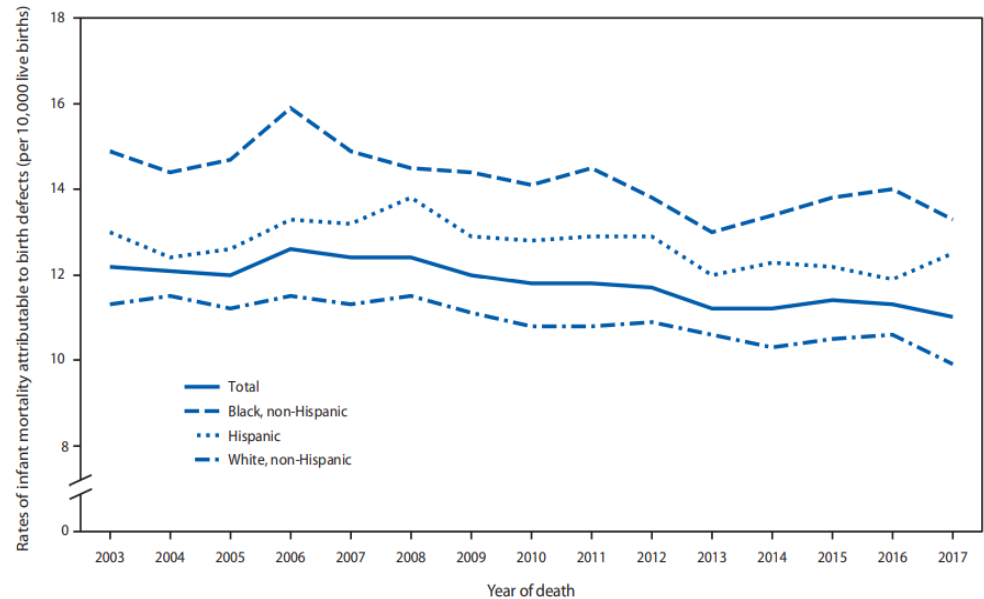
Birth defects cause  
**1** **in every** **5**  
deaths during the  
*first year* of life.



# Infant Mortality Attributable to Birth Defects, 2003–2017

- About 11 infant deaths due to birth defects per 10,000 babies born in the United States during 2003–2017
- During 2003–2017, rates of infant mortality attributable to birth defects declined 10% overall, but racial and ethnic disparities remain
- Disparities might be influenced by
  - access to and utilization of health care before and during pregnancy
  - prenatal screening
  - losses of pregnancies with fetal anomalies
  - insurance type

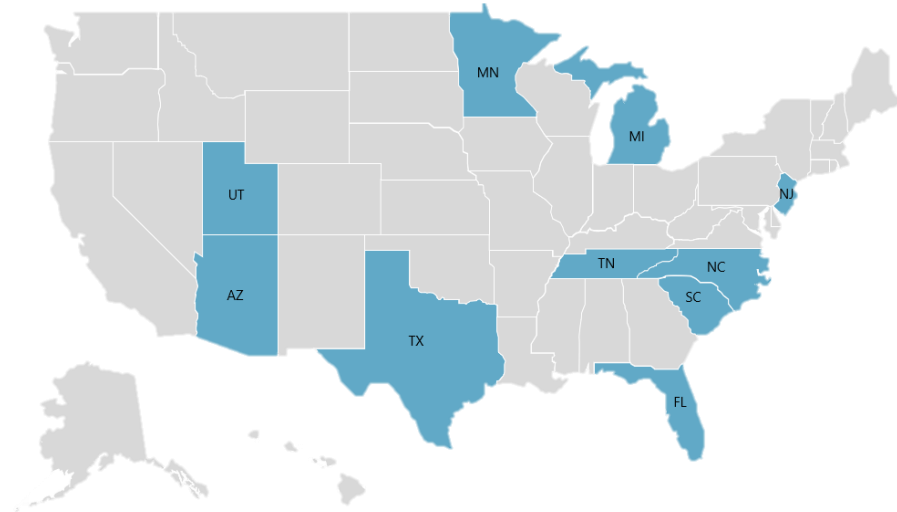
FIGURE 1. Rates of infant mortality attributable to birth defects, by maternal race/ethnicity — United States, 2003–2017



Almli LM, Ely DM, Ailes EC, et al. Infant Mortality Attributable to Birth Defects — United States, 2003–2017. MMWR Morb Mortal Wkly Rep 2020;69:25–29.

# State-based Birth Defects Tracking

- 43 states have birth defects tracking programs; among these, CDC funds 10 population-based state programs
- Information from birth defects tracking systems is used to
  - Understand if birth defects are increasing or decreasing over time
  - Plan and evaluate prevention activities
  - Refer babies and families affected by birth defects to services
  - Help states allocate their resources and services for affected babies and their families



# Identifying Causes of Birth Defects

- **CDC coordinates multisite case-control studies to identify causes and risk factors**



**Births from 1997-2011**



**Births from 2014 to present**

- **Findings from this research are used to**
  - Inform clinical practice
  - Confirm previously observed associations
  - Generate hypotheses for future study
  - Identify areas for prevention
  - Provide information to the public

# Preventing Birth Defects: Spina Bifida

- Survival of infants born with spina bifida improved between 1979 and 2003
- Improvements in survival varied by race/ethnicity
  - Black and Hispanic infants had poorer survival compared with white infants
- CDC activities
  - Continued promotion of expanded food fortification and folic acid use among all people who can get pregnant to prevent spina bifida
  - Public health research to decrease mortality and improve the health of those living with spina bifida



# Preventing Birth Defects: Congenital Heart Defects

- Survival of infants born with critical congenital heart defects improved between 1979 and 2005
- Newborn screening for critical CHD reduces early infant deaths by 33%, or 120 early infant deaths from critical CHD averted per year
  - Nationwide implementation
- CDC activities
  - Public health research to improve health and reduce mortality of individuals living with congenital heart defects





# Reducing Alcohol Use during Pregnancy

- Alcohol use during pregnancy is associated with miscarriage, stillbirth, preterm (early) birth, and sudden infant death syndrome (SIDS)
- Alcohol SBI is recommended for all adults, including pregnant people
- CDC promotes the implementation of alcohol SBI
  - By developing tools and workflows for clinics to integrate alcohol SBI in primary care settings
  - By collaborating on a quality improvement learning collaborative for health plans to improve reporting of the HEDIS measure, *Unhealthy Alcohol Use Screening and Follow-Up*
  - By developing messages for healthcare providers to emphasize the importance of providing alcohol SBI and developing resources and tools to enhance patient-provider communication about alcohol use and its risks during pregnancy

# Studying Opioid Use Disorder Treatments

- MATernal and Infant Network to Understand Outcomes Associated with Treatment of Opioid Use Disorder During Pregnancy (MAT-LINK)
- Results inform clinical practice recommendations and clinical decision-making around treatment for opioid use disorder among pregnant people

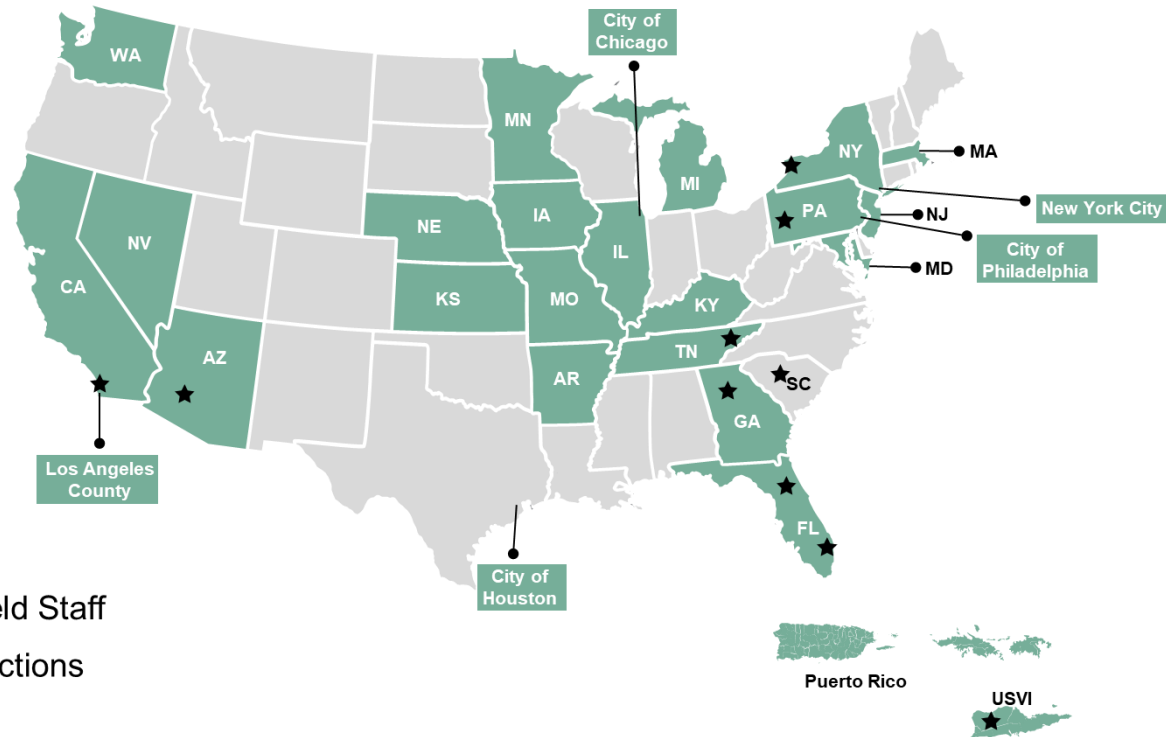


# Surveillance for Emerging Threats to Mothers and Babies

- Building on the work done during the Zika response, NCBDDD established SET-NET, a mother-baby linked longitudinal surveillance system to
  - Detect the effects of new health threats, like COVID-19, on pregnant women and their babies by collecting data from pregnancy through childhood
  - Use evidence-based, actionable information to help save and improve the lives of mothers and babies
  - Collect data on Zika, hepatitis C, syphilis, and COVID-19



# Jurisdictions funded for Surveillance for Emerging Threats to Mothers and Babies Network (SET-NET)\*



- ★ Contractual Field Staff
- Funded Jurisdictions

\*Jurisdictions and partners are supported through either a cooperative agreement or contractual mechanism.

Jurisdictional cooperative agreements are funded through the [Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases \(ELC\)](#)

# Monitoring and Understanding Risk Factors for Fetal Death

- Annual number of fetal deaths in the US approximately equal to annual number of infant deaths
- CDC activities
  - Monitor fetal deaths in the US through the Centers for Birth Defects Research and Prevention
  - Use data to better understand the causes and opportunities for intervention to prevent fetal deaths



# Racial and Ethnic Disparities in Fetal Deaths

- During 2015-2017, 1 in every 166 pregnancies ended in stillbirth in the US and almost 1 in 3 stillbirths did not have a cause specified.
- Black mothers were more than twice as likely to experience a stillbirth compared to Hispanic and white mothers.
- Health problems that occurred during pregnancy or underlying health conditions were listed as the cause of the stillbirth three times more often among Black mothers than among white mothers.



# CDC's CORE Commitment to Health Equity

*CDC is launching an agency-wide strategy that aims to integrate health equity into the fabric of all we do*

C

## **Cultivate** comprehensive health equity **science**

- CDC will embed health equity principles in the design, implementation, and evaluation of our research, data, surveillance, and interventions strategies.

O

## **Optimize** interventions

- CDC will use scientific, innovative and data-driven intervention strategies that address environmental, place-based, occupational, policy and systemic factors that impact health outcomes and address drivers of health disparities.

R

## **Reinforce** and expand robust **partnerships**

- CDC will seek out and strengthen sustainable multi-level, multi-sectoral and community partnerships to advance health equity.

E

## **Enhance** capacity and **workforce** engagement

- CDC will build internal capacity to cultivate a multi-disciplinary workforce and more inclusive climates, policies, and practices for broader public health impact.

# The New World of Public Health Data

Timely, Accurate, Accessible...

CDC is developing world-class data and analytics to transform today's reality and meet new opportunities for lifesaving prevention and response.

## THE REALITY

### REACTING

Always behind when an epidemic occurs



### COUNTING DATA

Collecting data without the ability to rapidly analyze it



### STORING IN SILOS

120 silos that restrict data sharing between systems



### LOOKING BACK

Using data to see what has already happened



### MOVING SLOWLY

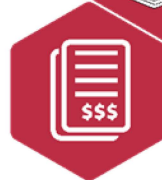
Outdated, paper based-systems with multiple points of data transfer



### USING RESOURCES

#### INEFFICIENTLY

New resources always required to do new data collection



## THE OPPORTUNITY

### ANTICIPATING

Getting ahead of an epidemic **to stop it**



### UNDERSTANDING DATA

Faster analysis to **gain real-time insights**



### SHARING ON PLATFORMS

Interoperable, accessible data **for action**



### LOOKING FORWARD

Using data to **predict and prevent threats**



### MOVING FAST

Creating a true digital highway to **transfer data in real time**



### CONNECTING RESOURCES

Leveraging existing resources and making common **investments for the future**





# New Study Using Machine Learning Shows Promise in Predicting Birth Defects Cases

Atlanta-based Study Authors Presented with Prestigious Wilson Publication Award



NEWS PROVIDED BY  
[Society for Birth Defects Research and Prevention](#) →  
Jun 01, 2021, 06:30 ET

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ATLANTA, June 1, 2021 /PRNewswire/ -- A new study using a cutting-edge technology to potentially predict certain birth defects wins the 2021 award for best paper published in the journal *Birth Defects Research*. The study used machine learning and natural language processing techniques to predict birth defects associated with exposure to the Zika virus during pregnancy.

The Society for Birth Defects Research and Prevention (BDRP) will recognize Richard Lusk and John Zimmerman of Deloitte Consulting, LLP, as well as Nicole M. Roth of the Centers for Disease Control and Prevention with the James G. Wilson Publication Award during the upcoming BDRP Virtual Annual Meeting scheduled to take place June 24-July 1, 2021.



## Exploratory analysis of machine learning approaches for surveillance of Zika-associated birth defects

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

