

CDC's National Birth Defects Prevention Study Centers for Birth Defects Research and Prevention

Understanding Birth Defects

- 1 in every 33 babies in the U.S. is born with a birth defect.
- Birth defects are a leading cause of infant mortality in the U.S., accounting for 1 in 5 infant deaths.
- In the U.S., the total costs for hospital care of children with birth defects exceed \$2.6 billion each year.
- Babies who survive and live with birth defects are at increased risk for many lifelong physical, cognitive, and social challenges.

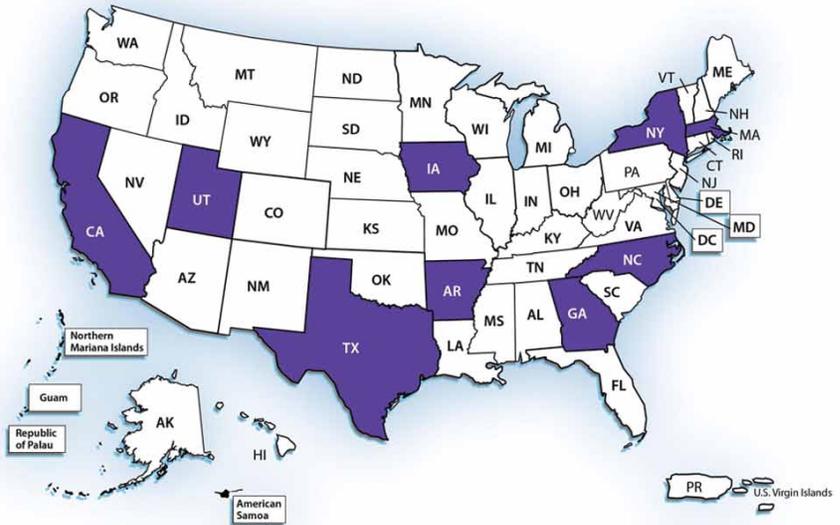


The National Birth Defects Prevention Study (NBDPS) is the largest population-based case-control study ever conducted in the United States to examine risk factors for birth defects.

The NBDPS was established to identify genetic and environmental risk factors for major birth defects. Researchers for the NBDPS began collecting data for births in October 1997 and more than 41,000 women have been interviewed to date. The Centers for Birth Defects Research and Prevention that participate in the NBDPS and have collaborated on this study are located in Arkansas, California, Georgia, Iowa, Massachusetts, New Jersey, New York, North Carolina, Texas and Utah. Each center has actively collected data on babies with and without birth defects in their area. Also, the centers conduct research to identify risk factors for birth defects and suggest areas for further investigation.

Importance of the NBDPS

The size and scope of this study provides the nation with a vast resource to look at possible causes of birth defects. Because of its population-based design, active case identification, and the racial/ethnic, geographic and socioeconomic diversity of the study population, the results are likely to apply to the U.S. population. *Population-based* means that the researchers look at all babies with birth defects who live in a defined study area, which is important to get a complete picture of what is happening within this known population. The valuable information from the NBDPS can guide the development of effective programs to prevent birth defects. The NBDPS has improved our understanding of the risk factors for birth defects. To date, more than 150 scientific papers have been published using data from the NBDPS, including those identifying new risk factors to help prevent birth defects.



CDC-funded National Birth Defects Prevention Study Centers, 2012

National Center on Birth Defects and Developmental Disabilities
Division of Birth Defects and Developmental Disabilities



Notable NBDPS Accomplishments

- **Antibiotics** – Antibiotics are often needed during pregnancy to treat infections. In the NBDPS data, the antibiotics most frequently used by pregnant women are cephalosporins (e.g. Keflex), penicillins, and erythromycins. Generally, women who used these medications were not at greater risk for most birth defects. However, women should talk to their doctors about which antibiotics are effective for treatment and safest to use during pregnancy.

- **Antidepressant Medications** – The most frequently used class of antidepressant medications are Selective Serotonin-Reuptake Inhibitors (SSRI). NBDPS researchers investigated whether or not there was an association between SSRI use during early pregnancy and risk for certain birth defects. For most of the birth defects studied, including heart defects, SSRI use during pregnancy was not associated with an increased risk. SSRIs were linked to a higher risk for three birth defects: anencephaly, craniosynostosis, and omphalocele, but the increased risks were small. Overall, these results are reassuring. Women should talk with their doctor about the best options for management of their depression during pregnancy.



- **Assisted Reproductive Technology (ART)** – Findings from research using NBDPS data suggest that some birth defects occur more often among infants conceived through ART, but the data are still limited since many couples who use ART have other risk factors that are associated with birth defects (e.g., older maternal age, multiple births as a result of fertility treatments). More research is needed, and those considering ART should be informed of all potential risks and benefits.



- **Diet Quality** – Although individual nutrients (e.g. dietary folate) have been studied extensively for their association with birth defects risk, NBDPS investigators studied whether better overall maternal diet quality is associated with a reduced risk for some birth defects. Results showed that healthier maternal diet patterns in the year before pregnancy were associated with reduced risks of neural tube defects (NTDs), such as anencephaly and spina bifida, as well as cleft lip (with or without cleft palate).

- **Prescription Pain Medications** – The most commonly reported prescription pain medications (also known as opioids) were codeine, hydrocodone, oxycodone, and meperidine. NBDPS researchers confirmed findings by another study that found that maternal prescription pain medication use early in pregnancy was associated with certain types of birth defects, including congenital heart defects, which are significant contributors to infant morbidity and mortality. It is important that health care providers discuss the potential risks and benefits of these medications with patients who are or may become pregnant.

- **Thyroid Disease** – Several studies have suggested an association between maternal Graves' disease (hyperthyroidism) and craniosynostosis, and data from the NBDPS analysis provides strong evidence for this association. The NBDPS results emphasize the importance of identifying women with active thyroid disease or a history of thyroid disease so that appropriate monitoring and optimal treatment can be provided during pregnancy.

For more information on the NBDPS, go to www.cdc.gov/ncbddd/birthdefects/NBDPS.html

National Center on Birth Defects and Developmental Disabilities

For more information please contact the Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333

Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

Email: cdcinfo@cdc.gov Web: www.cdc.gov