

Neural Tube Defects—Who’s at Risk?

Hispanics are at significantly higher risk for neural tube defects—



brain and spine abnormalities found in 7 per 10,000 California births. Spina bifida (open spinal cord) causes lifelong physical disabilities; the other main form, anencephaly (absence of the brain), leads to infant death.

CLASSIFICATION PROVIDES CLUES

This study examines neural tube defect (NTD) subtypes, which reflect differences in prenatal development and may have different causes. NTDs affect various parts of the brain/spinal cord, are open or covered with skin, and are sometimes accompanied by other birth defects. Studying NTD occurrence in California’s large, ethnically diverse population identifies high-risk groups and generates ideas about underlying causes.

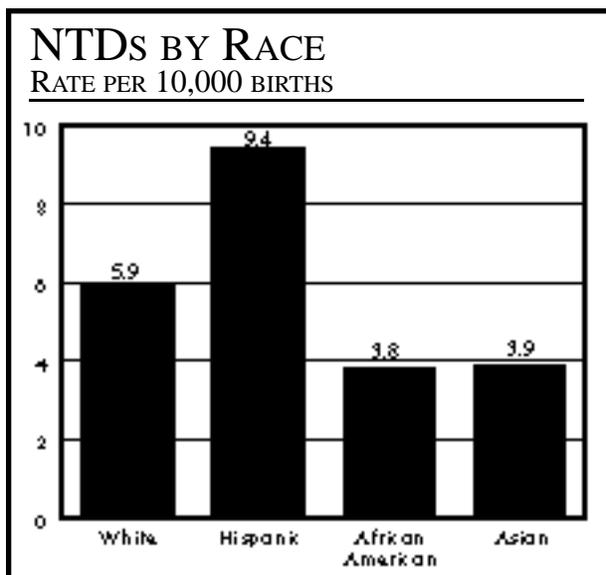
HISPANICS AT GREATEST RISK

Hispanics have higher risks for all NTD subtypes—overall, more than 50% higher than Whites. Hispanics also show the greatest risk of all racial/ethnic groups for anencephaly and spina bifida in the upper spine, the most serious NTDs.

Mexican-born mothers have a 1.7 times greater risk than US-born mothers of all races. However, rates are still lower than in Mexico, where NTDs affect 32 per 10,000 births.

OTHER RACES

About 9 in 10,000 Hispanic babies have NTDs, and 6 in 10,000 Whites. African Americans and Asians have lower risks: about 4 per 10,000. Anencephaly occurs less frequently in African American babies, and Asians have a substantially lower risk than other races for spina bifida. Hispanic infants with NTDs have the highest rate of additional birth defects, seen in 20%.



PUBLIC HEALTH IMPLICATIONS

NTDs are a common and serious birth defect—occurrence information helps target clinical care before/during pregnancy, plan medical and educational services needed by affected children, and provide insight into causes.

- 92% of babies with spina bifida are liveborn. Even after surgery, most have physical limitations and will not walk. Some will have developmental disabilities as well.
- 85% of anencephaly and 81% of spina bifida are isolated—affected infants have no other major defects.
- 86% of spina bifida occurs in the lower spine—these children generally have fewer medical complications and a better prognosis.
- 82% of spina bifida are not covered with skin and are potentially detectable by maternal serum alpha-fetoprotein, a blood test screening for NTDs. If the test is abnormal, follow-up procedures determine if the fetus is affected.
- Parents' ages do not affect risks, but anencephaly is more common in babies born to women who have previously given birth.
- Twins are 2-5 times more likely to have NTDs.

DATA SOURCES

All cases were identified through ongoing surveillance by the California Birth Defects Monitoring Program registry, an actively ascertained, population-based database of information on children with birth defects. The registry is designed to generate consistent, comprehensive, and accurate data.

- **Births included:** 700,000 live births and fetal deaths of more than 20 weeks gestation, born 1983-1987 in 55 California counties. (A state-wide alpha-fetoprotein screening program began in 1986, potentially affecting births in the final study year.)
- **NTD cases:** 193 anencephaly and 272 spina bifida.
- **Comparison group:** 5000 randomly selected live births without birth defects.
- **Diagnostic information:** Abstracted from hospital medical records, including surgical and autopsy reports.
- **Demographics:** Parents' ages, races, and birthplaces taken from the birth or fetal death certificate. Electively terminated or stillborn cases without fetal death certificates were excluded.

*REFERENCE: Shaw GM, Jensvold NG, Wasserman CR, Lammer EJ. Epidemiologic characteristics of phenotypically distinct neural tube defects among 0.7 million California births, 1983-87. **Teratology** 1994; 49(2):143-149.*

The California Birth Defects Monitoring Program—a public health program devoted to finding causes of birth defects—is funded through the California Department of Health Services and jointly operated with the March of Dimes Birth Defects Foundation.