

NTD NEWSLETTER



How Epigenetics May Play a Role in Neural Tube Defects (NTDs)

Neural tube defects (NTDs) are serious birth defects that affect early brain and spinal cord development. While folic acid is known to reduce the risk of NTDs, the biological reason for this protection has not been fully understood.

Recent research at GGC studied DNA patterns in 160 individuals with NTDs to explore whether changes in epigenetics—the chemical markers that help control how genes work—might be involved. The study was inspired by earlier observations showing that, before folic acid was added to foods, NTDs occurred more often in females than in males. This difference disappeared after folic acid fortification began.

Females have two X chromosomes, and one is normally “switched off” during development using chemical markers that depend in part on folic acid. Researchers proposed that when these chemical resources are limited, this process may not work properly, increasing the risk of NTDs.

GGC is actively building on these early findings to understand how reduced DNA methylation affects genome organization and gene activity—suggesting this discovery may be just the tip of the iceberg!

Birth Defects Awareness Month in South Carolina



During this month, we are focusing on online and social media ads to increase awareness about the

importance of taking a multivitamin containing folic acid to prevent birth defects of the brain and spine.

We are also reinforcing this message throughout the year with public lectures, science courses, press releases, and exhibits.

Folic Acid Recommendations for ALL Women of Childbearing Age

Since 2021, the NTD Prevention Program at the Greenwood Genetic Center has proposed that **the standard preventive dose of folic acid for all women of childbearing age in South Carolina be increased to 4 mg/d** during the 3 months prior to conception and the first month after conception.

The increased dose should be used with 2 caveats:

- 1) It should be prescribed as **folic acid alone** rather than by increasing the number of multivitamins as the dose of other vitamins may become excessive. This increased dose of folic acid may be used in addition to a single multivitamin with 0.4 mg folic acid per day.
- 2) If any **side effects** should occur, discontinue the 4 mg/day dose and return to the multivitamin with only 0.4 mg/d or prenatal vitamin with 0.8 mg/day alone.

Greenwood Genetic Center

101 Gregor Mendel Circle
Greenwood, SC 29646

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Fabulous Folate

Oh Baby, It's Good for YOU!

CONTACT US

The South Carolina Birth Defects Prevention Program is committed to ensuring that providers and patients receive accurate information on preventing neural tube defects (NTDs).

Educational materials on NTDs and NTD prevention along with dietary guidance and sample menus highlighting foods rich in folic acid are available upon request in both English and Spanish. In addition, free multivitamins and 1 mg folic acid supplements are available to physician offices and to women of childbearing age.


Contact Jane H. Dean, RN,
Statewide Program Coordinator at 1-800-676-6332
or 864-941-8138.

SUPPORT OUR EFFORTS

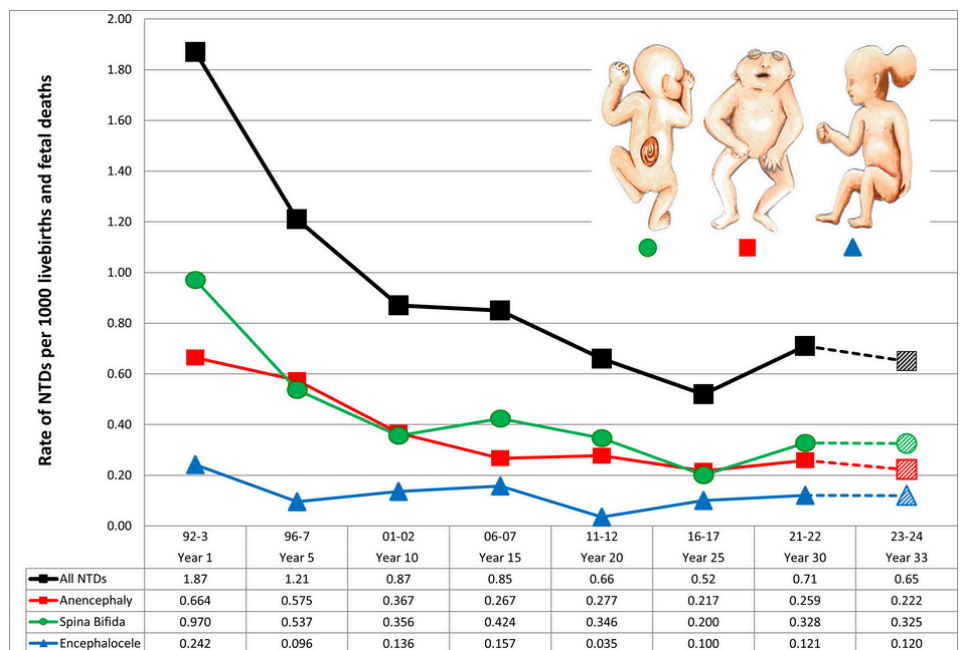
Contributions to support the SC Birth Defects Prevention Program may be made through the Greenwood Genetic Center Foundation.

For more information please visit
ggc.org/foundation or call 864-388-1813.

 www.ggc.org/folicacid

 1-800-676-6332

NTDs in South Carolina (1992-2025)



*Year 33 data is preliminary

NTDs in SC in 2025 (Project Year 33)

Cases by type of NTD:

Spina Bifida 18 (47%)
Anencephaly 13 (34%)
Encephalocele 7 (18%)

Detection Method:

Ultrasound 34
MSAFP 3
CVS 1

Geographic Distribution:

Region I (Piedmont) 22
Region II (Midlands) 12
Region III (Coastal) 4