



What are neural tube defects (NTDs)?

Neural tube defects (NTDs) are major birth defects of a baby's brain or spine. They happen when the neural tube (which later turns into the brain and spine) doesn't form right, and the baby's brain or spine is damaged. This happens within the first few weeks of pregnancy, often before a woman knows she is pregnant. The two most common NTDs are spina bifida (SPY-na BIF-a-da) and anencephaly (an-en-SEF-a-lee). These birth defects can cause lifelong disability or death. Many NTDs (up to 70%) can be prevented by getting enough of the B vitamin folic acid every day, starting **before** a woman gets pregnant.

What are spina bifida and anencephaly?

Spina bifida (SPY-na BIF-a-da) and anencephaly (an-en-SEF-a-lee) are two common types of NTDs. About 3,000 pregnancies in the United States are affected by spina bifida or anencephaly each year. Many of these defects could be prevented if all women got enough of the B vitamin folic acid every day, starting **before** they get pregnant.

Spina bifida occurs when the spine and back bones do not close all the way. When this happens, the spinal cord and back bones do not form as they should. A sac of fluid comes through an opening in the baby's back. Much of the time, part of the spinal cord is in this sac, and it is damaged. Most children born with spina bifida live full lives, but they often have lifelong disabilities and need many surgeries. Some of their problems include

- Not being able to move lower parts of their body. Some children might need to use crutches, braces, or wheelchairs to get around.
- Loss of bowel and bladder control. Some might have to wear protective clothing. Others learn new ways to empty their bladders and bowels.
- Fluid building up and putting pressure on the brain (hydrocephalus), which needs to be fixed with an operation.
- Learning disabilities.
- Allergy to latex (a created material found in some rubber-type products such as balloons or hospital gloves).

Children born with spina bifida don't all have the same needs. The problems some children face are much more severe than those of others. Even so, with the right care, most of these children will grow up to lead full and productive lives.

Anencephaly occurs when the brain and skull bones do not form right. When this happens, part or all of the brain and skull bones might be missing. Babies with this defect die before birth (miscarriage or stillbirth) or shortly after birth.

Who can have a baby with a neural tube defect in the United States?

Any woman in the United States can have a baby with an NTD. If a woman can get pregnant, she is at risk for having an NTD-affected pregnancy. No one can predict which women will have a pregnancy affected by an NTD. All women are at risk. Some things can increase a woman's chance of having a baby with an NTD:

- Previous NTD-affected pregnancy
- Diabetes when the blood sugar is out of control
- High temperatures in early pregnancy (such as fever that lasts a while, or using hot tubs and saunas)
- Obesity
- Some medicines (like some of those that treat epilepsy)
- Hispanic ethnicity (Hispanic women tend to have more babies affected by NTDs).

What are the costs linked with NTDs?

The average cost of caring for a child born with spina bifida for life is about \$636,000.00 per child. This is only an average cost, and for many families the total cost might be well above \$1,000,000. And it's not just the money. The physical and emotional tolls upon the families affected are high as well. That's why it's so important that women take folic acid every day to help prevent these birth defects.

What is folic acid and where can I get it?

Folic acid is a B vitamin that the body needs to make healthy new cells. If a woman has enough folic acid in her body before and during pregnancy, her baby is less likely to have an NTD. Women need to take folic acid every day, starting before they get pregnant. Every woman who could possibly get pregnant should take 400 micrograms (400 mcg or 0.4 mg) of folic acid daily in a vitamin or in foods that have been enriched with folic acid. There are two simple ways to be sure to get enough each day:

Take one vitamin with folic acid each day. Most multivitamins (MUL-tee-VI-ta-mins) sold in the United States have the amount of folic acid women need each day. Women can also choose to take a small pill that has only folic acid in it each day. Both types of vitamins can be found at most local pharmacy, grocery, or discount stores.

OR

Eat a bowl of a [breakfast cereal](#) that has 100% of the daily value (DV) of folic acid per serving every day. *Total, Product 19, Cheerios Plus, Special K Plus, Life, and Smart Start* are some examples. The label on the side of the box should say “100%” next to folic acid.

Along with taking a vitamin or eating a cereal that has 100% DV of folic acid, women should always eat a healthy diet that has lots of fresh fruits and vegetables and other healthy foods. Scientists don't know how folic acid works to prevent birth defects. But they do know that folic acid is needed to make healthy new cells, like the ones that make up a baby's brain and spine. Taking folic acid every day, starting before and during pregnancy, can reduce the risk for these serious birth defects by 50% to 70%.

Are women getting enough folic acid?

Most women in the United States do not get enough folic acid to help prevent birth defects. The average woman gets less than the amount needed from her diet alone. That's why all women who can get pregnant are urged to take a vitamin with folic acid or eat a serving of fully fortified breakfast cereal each day.

Can women get too much folic acid?

It's unlikely that women will be hurt from getting too much folic acid. We don't know of an amount that is dangerous. Yet, for most women, consuming more than 1,000 mcg of folic acid daily is of no benefit. Unless their doctor advises them to take more, most women should limit the amount they take to 1,000 mcg a day.

Why can't I wait until I'm pregnant—or planning to get pregnant—to start taking folic acid?

Birth defects of the brain and spine happen in the first few weeks of pregnancy, often **before** a woman finds out she is pregnant. By the time she realizes she is pregnant, it might be too late to prevent those birth defects. Also, half of all pregnancies in the United States are unplanned. These are two reasons why it is important for all women who can get pregnant to be sure to get 400 mcg folic acid every day, even if they aren't planning a pregnancy any time soon.

I can't swallow large pills. How can I take a vitamin with folic acid?

A woman can get her vitamin with folic acid in one of several ways. She can take a multivitamin or a small single supplement of folic acid. These days, multivitamins with folic acid come in chewable chocolate or fruit flavors, liquids, and large oval or smaller round pills. A single serving of many [breakfast cereals](#) also has the amount of folic acid that a woman needs each day. Check the label! Look for cereals that have 100% daily value (DV) of folic acid in a serving.

Vitamins cost too much. How can I get the vitamin with folic acid that I need?

Many stores offer a single folic acid supplement for just pennies a day. Another good choice is a store brand multivitamin, which includes more of the vitamins a woman needs each day. Unless her doctor suggests a special type, she does not have to choose among vitamins for women or active people, or even one to go with a low carbohydrate diet. A basic multivitamin meets the needs of most women.

How can I remember to take a vitamin with folic acid every day?

A woman may combine taking her vitamin with another habit. Taking a vitamin when she brushes her teeth, has her morning coffee, finishes her shower, or brushes her hair may make it easier to remember. Seeing the vitamin bottle on the bathroom or kitchen counter could help her remember it. She might even take a vitamin when her children take theirs. That sets a good example!

Are there other health benefits of taking folic acid?

Folic acid might help to prevent some other birth defects, such as cleft lip and palate and some heart defects. There might also be other health benefits of taking folic acid for both women and men. More research is needed to confirm these other health benefits.

To learn more about the national folic acid education campaign, visit our Web site at www.cdc.gov/ncbddd/folicacid

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