



The global health burden of vitamin and mineral deficiencies is profound. Vitamins and minerals used in fortification prevent birth defects of the brain and spine as well as anemia caused by nutritional deficiencies.

Enabling healthier lives

The issue: Inadequate folic acid intake causes serious birth defects, and iron deficiency contributes to the deaths of thousands of young women during pregnancy and childbirth.

Why it matters: Iron deficiency anemia affects millions of children and women globally. Nutrient deficiency leads to a myriad of health problems and healthcare expenses. The consequences of iron deficiency include reduced work capacity, undeveloped physical and mental skills and increased risk of maternal death.

Solution and impact: The Food Fortification Initiative is a public, private and civic partnership to promote the use of foods fortified with essential vitamins and minerals around the world. The network of partners, including CDC, is working to encourage the production and marketing of fortified flour and rice. CDC Foundation partners have included the Australian Department of Foreign Affairs and Trade, Bühler AG, Bunge Limited, Cargill, Inc., GiveWell, the Global Alliance for Improved Nutrition (GAIN), Nutritional International and UNICEF, among others.

Currently 87 countries require fortification of at least one industrially milled cereal grain. Of these, 86 countries fortify wheat flour alone or in combination with other grains. A 2015 study found that 35,500 birth defects of the brain and spine were prevented in one year due to flour being fortified with folic acid—an average of 97 healthier babies every day.

About us: The CDC Foundation is an independent, nonprofit organization and the sole entity created by Congress to mobilize philanthropic resources to support CDC's critical health protection work. Since 1995, we have launched nearly 1,000 programs in more than 100 countries and raised over \$700 million through engagements with philanthropies, corporations, organizations, governments and individuals.

How you can help: Beyond federal support, philanthropic and private sector investments are essential to ensure CDC's ability to support the global community in protecting women and their babies. Join us in making grain fortification standard practice in industrial mills throughout the world. Grain fortification is a simple, affordable way to dramatically improve global health.

Learn more: To invest in CDC's efforts to protect women and children or to learn more, contact Advancement at the CDC Foundation: advancement@cdcfoundation.org, 404.653.0790.

Scope of the problem



It is estimated that more than **243 million women** of child-bearing age, over **16 million pregnant women** and **114 million children** are affected by iron-deficiency anemia.

An estimated **320,000 neural tube birth defects** occur each year; most are preventable with enough folic acid at the right time.

Stories of impact: **Protecting children from birth defects**



You can make a difference: Beyond federal support, investments by the philanthropic and private sectors are essential to the health of millions of women and children around the world.

Juliana Auma Okoth's daughter Phoebe was born with spina bifida and hydrocephalus 22 years ago in Kenya. At that time Kenya was not fortifying its flour with folic acid. Juliana started the Spina Bifida and Hydrocephalus Association of Kenya. Kenya now fortifies wheat and maize flour with eight nutrients, including folic acid. Below is an excerpt from her July 2017 conversation with the Food Fortification Initiative.

When I was four months pregnant, I was given some yellow tablets. But when I took them, they would make me vomit, so I threw them away. Later on, I learned that the yellow tablets were iron and folic acid. Even if I had been aware of folic acid, I couldn't have believed that those small tablets would have a great impact in the life of an unborn child.

Phoebe was born with both spina bifida and hydrocephalus. "Spina" stands for spinal cord, and "bifida" is the opening. With spina bifida, the spinal cord does not close normally, and so there's a hole. It can cause paralysis of the lower limbs. Most children (with spina bifida) are not able to control their bladder and bowel function.

Some develop hydrocephalus as a complication of spina bifida. Every person's head produces water. This water is called cerebrospinal fluid. The head is supposed to absorb this water naturally. For children with hydrocephalus, their production of this fluid is higher than absorption, and they must have shunts (medical devices installed surgically to drain the fluid). Untreated hydrocephalus can cause brain damage, blindness, and some children can die.

For Phoebe's medical care, at first I went to the national hospital and was very hopeful. When I met the neurosurgeon who could treat Phoebe, I was told they could treat my child for free, but we would have to wait for two years because the list was so long. As you wait, your child's condition worsens.

I gathered courage and went to one of the newspapers and appealed for help, and that is how I was able to get in a private hospital in Nairobi.

Phoebe has had nine major surgical procedures. One time, she was put in a cast and had to stay in bed for six months. To take care of her and turn her so she does not get bed sores is sometimes a whole year of not working for me.

My daughter is now 22 and has a catheter to empty her bladder. She has to set an alarm for 6 a.m. every day to do this. This will be a life-long condition. She uses a wheelchair for long distance and braces while in the house.

"If you fortify their foods...they will get their folic acid."

—Juliana Auma Okoth

I wondered how many other families were struggling, so I started the Spina Bifida and Hydrocephalus Association of Kenya to provide hope for families and to give parents a sense of belonging. We also show parents how to make money so they can take care of their children.

Supplementation will never be enough. Remember that I threw away my folic acid. How many other women will? How many women know how early they need folic acid? But if you fortify their foods, they will consume their foods, and they will get their folic acid. Work with the parents. We have the evidence. We have the experience. Let us help you make that noise about fortification.

Learn more: To invest in CDC's efforts to protect women and children or to learn more, contact Advancement: advancement@cdcfoundation.org, 404.653.0790.