

Improving Nutrition: “A No Brainer”

In 2009, a writer for *The Economist* called providing essential vitamins and minerals “a no brainer.” Nutrient deficiency leads to a myriad of health problems and healthcare expenses. Consequently each dollar spent on reducing chronic under-nutrition has a \$30 payoff.¹

The Food Fortification Initiative (FFI) helps country leaders develop sustainable programs to fortify wheat flour, maize flour, and rice. The most common nutrients included are iron and folic acid. These are the heroes in preventing nutritional anemia and neural tube birth defects such as spina bifida.

801 Million Women and Children With Anemia

In 2011, an estimated 528 million women and 273 million children worldwide had anemia.² **The total is more than the combined population of the United States, Indonesia, Brazil, and South Africa.**

Anemia:

- Reduces productivity
- Hinders children’s physical and mental development
- Contributes to maternal mortality

While anemia can be caused by many things, half the anemia among women and 42% of anemia in children in 2011 was attributed to iron deficiency.²



In India, 55% of women between the ages of 15 and 49 have anemia, according to the 2005-2006 National Family Health Survey. Photo by Meena Kadri on Flickr.

Spina Bifida (Open Defect)

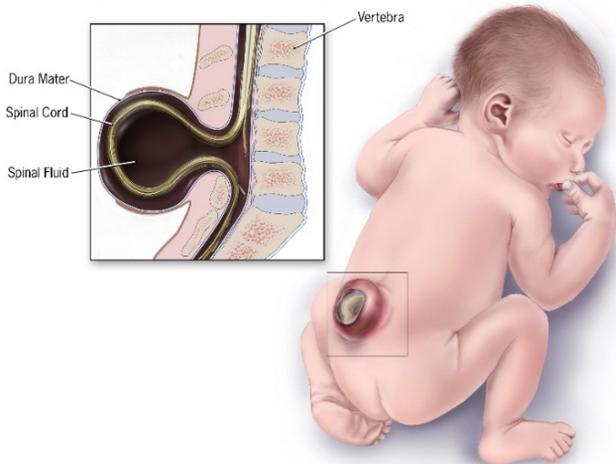


Illustration by the US Centers for Disease Control and Prevention.

320,000 Babies With Birth Defects

The March of Dimes estimates that 320,000 pregnancies are affected worldwide by neural tube birth defects every year.

The most common neural tube defect is spina bifida. Even if excellent healthcare is available, spina bifida is **permanently disabling**. Another type of neural tube defect is anencephaly. It is **always fatal**.

Researchers estimate that **246,297 neural tube defects could be prevented every year** if women consumed enough folic acid at the right time.³ Women need folic acid (vitamin B9) before conception and in the early weeks of pregnancy. Fortification provides this nutrient through regularly consumed foods.



Food Fortification Initiative
Enhancing Grains for Healthier Lives

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Fortification Works

Currently 87 countries require fortification of industrially milled wheat flour, maize flour, and/or rice. This is successful partly because it does not require consumers to change behaviors.

No Longer Detected

Fortifying with iron as well as folic acid, riboflavin, and vitamin B12 reduces the risk of anemia from nutritional deficiencies. For example, iron deficiency anemia **could not be detected** among children in Costa Rica after foods were fortified with iron.⁴

The effects of anemia are mostly invisible, and country leaders often devote time to more tangible health problems. **If present trends are maintained, the probability of reducing anemia by half by 2025 is negligible.**² Rice fortification, in particular, is mostly an untapped opportunity.



97 a Day

Globally an estimated 35,500 birth defects were prevented in 2015 - **an average of 97 a day** – in countries where flour was fortified with folic acid.³

1,326 a Year

In the United States alone, fortifying with folic acid is credited with **preventing 1,326 neural tube birth defects a year.**⁵

FFI Vision: Smarter, stronger, healthier people worldwide by improving vitamin and mineral nutrition

Since beginning in 2002, the Food Fortification Initiative (FFI) has worked as a **public, private and civic-sector partnership**. This maximizes strengths and avoids duplication of efforts.

Progress: Measured against a five-year strategic plan and annual work plans.

Staff: 13 people worldwide, including a Global Secretariat at Emory University in Atlanta, Georgia.

Oversight: 10-member Executive Management Team representing global leaders in public health and grain industries.

Donations provide technical assistance for planning, implementing and monitoring successful fortification programs. For example, gifts may provide an expert evaluation of a country's capacity to fortify rice, help train food safety inspectors to ensure that flour is properly fortified, or guide local nutritionists in ways to measure the impact of fortification.



For more information

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¹ Third Copenhagen Consensus <http://www.copenhagenconsensus.com/publication/hunger-and-malnutrition>.

² Stevens, G., et al., Global, regional, and national trends in hemoglobin concentration and prevalence of total and severe anemia in children and pregnant and non-pregnant women for 1995-2011: as systematic analysis of population-representative data. *The Lancet Global Health*. July 2013.

³ Arth, Annelise, et al. 2012 [A 2015 global update on folic acid-preventable spina bifida and anencephaly](#). *Birth Defects Research (Part A): Clinical and Molecular Teratology*. July 2016.

⁴ Martorell, Reynaldo, et. al: Effectiveness evaluation of the food fortification program of Costa Rica: impact on anemia prevalence and hemoglobin concentrations in women and children. *American Journal of Clinical Nutrition*. January 2015 vol. 101 no. 1 210-217.

⁵ Williams, Jennifer; et al., Updated Estimates of Neural Tube Defects Prevented by Mandatory Folic Acid Fortification – United States, 1995-2011. *Morbidity and Mortality Weekly Report (MMWR)* Rep 2015;64: 1-5.