

Fortifying Foods to Save Lives and Livelihoods

Mark Fryars and Zahra Popatia

Human beings need vitamins and minerals—known as micronutrients because our bodies need them only in minute quantities—for growth, brain development, and immunity against diseases. Deficiencies in vitamin A, iron, zinc and iodine in particular have major impacts on health, especially for the most vulnerable groups—women and children.

Millions of people in the developing world suffer from preventable vitamin and mineral deficiencies. Here are some examples of the suffering wrought by wide-scale vitamin and mineral deficiencies every year:

- 60,000 pregnant women die.
- 1,000,000 children under age five die.
- 200,000 babies are born with severe birth defects.
- 18 million babies are born severely mentally impaired.
- Millions of children and adults do not achieve their potential in school and work.
- \$6 billion in adult work performance is lost.
- Developing country economies lose up to 2 percent of their Gross Domestic Product.¹

The greatest tragedy of all is that ‘micronutrient malnutrition’ is largely preventable.

What needs to be done?

We can address this problem in two ways: by providing at-risk people with more vitamins and minerals, and by controlling the infections that cause or worsen deficiencies in essential nutrients.

Health workers can deliver millions of vitamin supplements and medicines to combat infections among women and children every year, but resource constraints mean they cannot reach everyone often enough to correct all the deficiencies.

Encouraging vulnerable people to diversify their diets can work in some settings, but changing behavior takes time and many do not have a variety of food sources. This is why developing programs to enrich the nutritional value of staples and other commonly consumed foods is particularly urgent.

While scientists are working on ways to improve the nutritional value of many foods, we already have the technology to fortify foods with essential vitamins and minerals. It is simple, cheap and effective.

What are fortified foods and how can they help?

Fortification is the addition of small quantities of vitamins and minerals to foods and condiments that are regularly consumed by large parts of the population. Simply adding essential micronutrients such as iodine, iron, zinc, folic acid, and vitamin A to foods can make a swift improvement in people’s health and well being.

Most food fortification takes place at the factory level. It involves adding



Rick Reinhard

Sprinkles,TM a vitamin-enriched powder, is used to home fortify foods served to infants.

measured amounts of a nutrient-rich ‘premix’ to staple foods when they are processed.

At just \$0.05 per person per year, iodizing salt has been tremendously successful in reducing iodine deficiency disorders, which can cause goiter and brain damage. The Micronutrient Initiative and other partners have developed a double-fortified salt by adding iron as well as iodine. At a cost of \$0.18 to \$0.20 per person per year,² this ‘super-salt’ has the potential to reduce the damage caused by iron deficiency by one third.

Flour fortification offers a low-cost, highly effective way to use a staple food to dramatically improve global health. The cost of the premix to fortify flour with iron and folic acid can be as little as \$0.30 to \$0.50 per metric ton.³ Vitamin B complex and vitamin A can also be added to the pre-mix for a total cost of between \$1.40 and \$1.60 per metric ton.⁴

Other foods, such as vegetable oils, milk, sugar and condiments like



Studies in Kenya, Mexico and Indonesia revealed that fortification increased workforce productivity by 7 to 42 times the cost of the program. In the Philippines, similar tests showed a rise in productivity of 6 to 21 times the cost of the program.”

soy sauce and bouillon cubes have proven very suitable for fortification.

What progress has been made?

At the country level, public-private partnerships to start and sustain food fortification programs are already underway in parts of Africa, Latin America, the Middle East and Asia with the support of several agencies such as the Micronutrient Initiative, UNICEF, Helen Keller International, the World Food Program, World Vision, CARE and the Global Alliance for Improved Nutrition (GAIN).⁵

Nigeria has mandated the fortification of three staple foods with vitamin A: vegetable oil, wheat and maize flours. South Africa has started fortifying flour and other foods. Cote d’Ivoire, Morocco, Yemen and Bangladesh were among the first countries to start a voluntary program to fortify oil with vitamin A, and national vegetable oil fortification programs have now also started in Mali and Burkina Faso.

Several countries have fortified sugar with vitamin A. In Guatemala for example, blindness due to severe vitamin A deficiency among children had fallen in 2000 to just 20 percent of the level in 1990, when nationwide use of both fortified sugar and vitamin A supplements began.

Chile and Cuba have successfully fortified milk with iron. India is forti-

fyng lozenges for very poor children with vitamin A, vitamin C, folic acid and iron.

Many people in the world are not able to buy and consume processed fortified foods. However, households can now often fortify their own food at home. The Hospital for Sick Children in Toronto, Canada, for example, has developed Sprinkles™ for children under the age of two—and shown them to be highly effective in treating anemia. Sixty daily-use sachets are enough to treat and prevent anemia in children under two, the most critical time of life for learning development. The cost per sachet varies from \$0.015 to \$0.02, so the cost of a two-month treatment would be about \$1.00 per child.⁶

<p style="text-align: center;">Typical Formulation to Address Nutritional Anemia</p> <p style="text-align: center;">Dose Per Sachet</p> <p style="text-align: center;">12.5 mg Iron 5 mg Zinc 250 mcg Vitamin A 30 mg Vitamin C 160 mcg Folic Acid</p>
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So what still needs to be done?

Despite widespread international recognition of the value of fortified foods, a great many people in developing countries still do not have access to them. Iodized salt is the most successful fortified food so far, but 43 million babies every year are still unprotected from a debilitating lack of iodine.

As is often true, a lack of money is part of the problem. Starting up a fortification program requires up-front investment. But the return on investment is unprecedented. It has been estimated that to provide

all women and children in Asia who are at risk of vitamin and mineral deficiency with comprehensive protection would cost approximately \$0.5 billion per year—at least for an initial five-year investment period. Cost estimates for Africa come to less than half of that.⁷

GAIN is working with other agencies to compile a comprehensive investment strategy, but currently the total investment in micronutrients (from the Canadian Agency for International Development, the US Agency for International Development and The Bill & Melinda Gates Foundation) meets barely 20 percent of the need.

What can we do?

Here is one global problem that we—and that means you—can actually help solve. What we can do is raise the awareness of the public and private sectors—including policymakers, industry, consumer groups and the public at large—to demand better nutrition as part of people’s right to food and right to health.

Because malnutrition affects health, education, employment and life’s other essentials, it is everybody’s problem. Unfortunately, in too many countries this means that it ends up being nobody’s problem, so no one takes the lead to fix it.

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