

# The Story of Folic Acid Fortification

[Dave Erickson] Folic acid is a vitamin which can protect a developing baby from getting a serious problem that can cause difficulties walking.

[Margie Watkins] Spina bifida. Anencephaly. These are major birth defects that are either fatal or have serious, long-term consequences for the child.

[Godfrey Oakley] And, in contrast to polio, where you only get motor- you only lose motor function, with spina bifida, you lose both motor function and sensory function.

[Joe Mulinare] We estimate that about 300,000 babies are affected by neural tube defects around the world.

Dave and Godfrey Oakley invited me to come to CDC to work on the Vietnam Veterans Agent Orange Risk Study for Birth Defects.

And we analyzed that data and published it and it was one of the first population based studies that was done to show that folic acid in a multivitamin could reduce the risk of neural tube defects.

[Dave Erickson] And it was enough to prompt us to figure out whether this was really an idea worth promoting on a public health scale or whether it was something that was just a fluke.

[Godfrey Oakley] June the 24<sup>th</sup> at 5 PM, 1991 was probably the most marvelous professional moment of my life, when I got a call from, now Sir Nicolas Wald, telling me that the randomized control trial that he had done to find out if folic acid or a different vitamin would prevent Spina Bifida, it had turned out to be such a positive study. It prevented 72 percent of Spina Bifida and anencephaly. And it was the gold standard study that we call a randomized control trial. And it meant that we could bet the farm that folic acid prevented Spina Bifida.

[Margie Watkins] So, you're doing something that prevents diseases and prevents conditions with the result of not only saving children's lives, but improving their quality of life.

[Godfrey Oakley] So, the first thing we did was make a recommendation for women who had previously had an affected child with either anencephaly or Spina Bifida, these two very severe birth defects. And that was one of the easiest policy things I ever did at the CDC.

[Dave Erickson] This was a special recommendation because it called for what we now call a high dose of folic acid, a pharmacological dose of folic acid.

[Margie Watkins] If you can prevent something like this, especially on the scale of preventing thousands of these birth defects, then this is a real accomplishment.

[Godfrey Oakley] How much prevention you get depends on how bad off you are.

[Cynthia Moore] The China study was really public health at its best.

[RJ Berry] At the time we did the China Study, people didn't know for certain whether folic acid, by itself, would prevent neural tube defects.

[Godfrey Oakley] We sent RJ off to China to do a large community intervention. He wound up showing some really fascinating things.

[Cynthia Moore] We were asking folks in the field, the health providers that were in the villages, to take pictures of these babies in a way that we could then use the picture to make a diagnosis.

[Godfrey Oakley] Among the things that he showed was that how much prevention you get depends upon how high the incidence is when you put the folic acid into the population. And in parts of China, it went down almost ninety percent.

[RJ Berry] And the China Study was the first and only study that showed that folic acid, by itself, without other vitamins, prevents neural tube defects.

[Godfrey Oakley] And from that moment on I knew that all we needed to do to keep tens of thousands of kids each year out of wheel chairs was to get everyone with a reproductive age 400 micrograms of folic acid every day.

We have lots of success stories about preventing Spina Bifida with folic acid fortification programs. And the key is you have to make it so that every manufacturer has to do it.

So, in the U.S., you know, it was prohibited before February of '96 and then it was required 21 months later. And so beginning in January 1, 1998 all enriched grains in the U.S. had to have folic acid in it.

[Margie Watkins] So, once the folic acid was added to cereal grain products, added to the flour that goes into the bread that we eat and other cereal grain products, then you want to count how many cases of neural tube defects there were.

[Dave Erickson] It has resulted in a substantive reduction in the occurrence of neural tube defects among babies who have been born in the United States.

[Godfrey Oakley] There're roughly three hundred thousand cases of anencephaly and Spina Bifida around the world, and we're preventing some place around about 15 percent of that, so some place on the order of twenty thousand, thirty thousand a year. And, it's wonderful. I mean, thousands of kids don't have Spina Bifida and anencephaly.

[Joe Mulinare] To have something so simple as folic acid in fortified foods that can prevent 50 to 70 percent of these children from having this condition and actually being born healthy, to me, is a success story beyond belief.

[Godfrey Oakley] Smallpox is gone. Polio's on the way to being gone. I'd like for Spina Bifida F to be the next one.

[Joe Mulinare] And that to me is an exceptional thing to have happened and I have had the opportunity to be a part of that.

[Godfrey Oakley] Tough not to be, tough not to be an evangelist for this, you know?