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Quietly, Invisibly, Ominously Getting Healthier and Healthier

By Thomas R. DeGregori

Modern life has buffered us from so many of the constant dangers of pre-modern life that few of us fear them. Unfortunately, the removal of the constant threat of disease and starvation seems to cause us to fill in the vacuum with new fears. Instead of fear-mongering, though, the happy story of the last half-century should be told in terms of the cancer epidemics or other dark, unseen forces that *didn't* strike us.

The story is often told of the famous Harvard economic history professor who would tell his students -- many of whom no doubt took the comfort of modern living for granted -- to look to their left and to their right and then consider that had it not been for the Industrial Revolution, two out of every three of them would not have been alive. Based on the research of Kevin M. White and Samuel H. Preston (1996), I do the same in my classes, informing them that if 1900 birth and death rates had prevailed throughout the century, half of them would not be here. Or for students from the developing world, that without the changes in mortality in just the last half century, one quarter of them would not be alive (Heuveline 1999).

Stated differently, most of us are the beneficiaries of life-saving forces that have emerged over the last century that are to a large degree *imperceptible*. We now take factors such as clean water and immunization for granted -- except when scares arise about their alleged dangers. Our children can be immunized with up to eleven injections at an age that they can no longer remember when they become adults -- thus making most of them unappreciative or even unaware of the resulting benefits. It is the imperceptible *absence* of micro-organisms from our food or water (or at least concentrations of them too low to be life-threatening) that allows us to safely partake of the food and drink that sustain our lives. Carcinogenic smoke no longer fills our homes because we are not cooking and heating with open wood fires. In other words, our lives are sustained by all the things that are unseen because they are no longer there or life-saving items such as immunization and antibiotics that are not always visible.

The Example of Folate

A recent article and editorial in the *American Journal of Clinical Nutrition* illustrated the quietly life-saving character of modern life (Pfeiffer et al 2005 and Rosenberg 2005). It concerned the results of the 1998 mandating of folic acid fortification. "Mandatory folic acid fortification of cereal grain products was introduced in the United States in 1998 to decrease the risk that women will have children with neural tube defects" (Pfeiffer et al. 2005). The study demonstrated that "every segment of the U.S. population appears to benefit from folic acid fortification" (Pfeiffer et al 2005). The earlier scientific study "of folic acid fortification as an approach to prevent neural tube defects is a latter-day example of the application of meticulously controlled scientific trials to insightful previous hypotheses and observational studies. These controlled trials led the FDA to mandate folic acid fortification of the diet" (Rosenberg 2005).

It should be noted that the decision for the folate mandate was taken in a very open, democratic way. There was plenty of opportunity for informed support or criticism. As with so many aspects of modern life, unless some interest groups decide to make it a broader public issue, few outside those professionally involved (and informed) either know about it or in learning about it do anything other than file the knowledge far back in their minds. One can guess, and it is only a guess on my part, that those most in need of the folate supplementation are likely to be the poor and least-educated, who might be the least aware of the mandate or the quiet addition to their daily bread.

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A bit of historical background is in order: Vitamins were first identified in 1912, and the first vitamin was not commercially available until the 1920s. "The synthesis of folic acid by Lederle Labs in 1947 was one of the milestones achieved during the era of discovery of vitamins in the first half of the twentieth century. This stable and unreduced form of folate has served wonderfully in preventing and treating folate deficiency and for much of the study of folate biology" (Rosenberg 2005). And those who think their vitamins should be "all-natural" should know that "folic acid is not the natural form of the vitamin as it exists in food" (Rosenberg 2005). In a sense, most all vitamins in pill form are unnatural (to the extent that term has any meaning), since we get most of our vitamin intake as part of complex proteins. "Although folic acid is not the natural food form of this vitamin, folic acid fortification has resulted in a profound improvement in nutritional status and has had a substantial effect on the original target -- neural tube defects" (Rosenberg 2005). (It should be noted, though, that excessive intake can be harmful, which should be of interest to those who pop megadoses of vitamins and other substances in the belief that they are following Nature's path to a longer life.)

"Folic acid supplementation during the periconceptual period for the prevention of spina bifida and related neural tube defects" has been demonstrated to be wise, as has "food fortification as the most feasible approach to increasing folic acid intakes in women before conception" (Rosenberg 2005). One often encounters other studies that find that increased folate intake during the periconceptual period leads to a reduction in childhood leukemia and other studies that indicate that increased folate intake may help in delaying the onset of Parkinson's disease. How many of the beneficiaries of this intervention even know that they are receiving the benefit and how many of the rest of us know that a "silent" life-saving product has been added to our daily bread? How many parents of a healthy baby know that the nutritional status of the mother would have resulted in a newborn with "spina bifida and related neural tube defects" if it had not been for the mandated folate fortification?

Almost within days of the publication of the study showing the benefits of the 1998 folate fortification mandate came another peer-reviewed report arguing that still more lives would be saved from deadly disease with a larger dose of folate in flour. I have yet to see a response to it, but it is a reminder that there is room in science for improvement, refinement, new ideas, disagreement, and productive argument, without rejecting the underlying principles of the scientific method.

Failure to Appreciate the Process that Makes It All Possible

Unfortunately, the foes of science will point to legitimate disagreements about how best to implement plans such as folate supplementation as evidence the benefits and risks are completely unpredictable and unknown and thus that retreat from new advances is the only option.

It may not qualify as an airtight scientific theory, but it is a fact that we humans have obviously done something right in the twentieth century. In the twentieth century in the U.S., we added nearly thirty years of life expectancy and reduced infant mortality by over 90%. Other advanced countries did even better, in some cases much better than we did. In developing countries, about twenty years of life expectancy has been added in the last fifty years. Changes of these magnitudes don't just happen for no reason at all. We must be doing something right. We therefore have a right to ask critics of modern technology whether or not they are opposing the very processes that brought us these gains. We might ask them a couple related questions: If, for instance, there is a problem such as an adverse reaction to an immunization that is otherwise beneficial, are critics who point this out seeking a solution to the problem or simply demanding that we abandon the process, benefit and all? Do they have an alternative that produces more benefit with less risk and what is their evidence for it? In other words, we have as much right to demand answers from the critics as the critics have to demand answers from the rest of us (see ACSH's new report on the related topic of *Weighing Benefits and Risks* in pharmaceutical use).

It is comforting to believers to hear activists declare the entirety of some aspect of modern life such as agriculture or pharmaceuticals a "failure" and call for a "new paradigm" or "more holistic understandings." In practical terms, such advocacy at best means a return to older, less productive forms of agriculture or a variety of herbs, tonics, or purgatives and other medical practices that were associated with shorter, less healthy lives. One final question to ask the critics is whether they are operating under the assumption that we were better off in some prior time? If so, we have a right to be more than a little dismissive of their advocacy.

Even the boy who cried wolf could on occasion be right, and even a crackpot might make a lucky guess, but in a world of legitimate competing demands on our time, we have every right to give such critics low priority for our attention. Unfortunately, their skill at public

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relations and fear-mongering forces us to respond and give their claims vastly more attention than they deserve. This diverts scientific talent and resources to the task of publicly refuting them rather than to advancing knowledge – through the silent and underappreciated but life-enhancing advancement that undergirds all modern human endeavors.

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See also: ACSH's booklet *Good Stories, Bad Science: A Guide for Journalists to the Health Claims of "Consumer Activist" Groups*.

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