The underbelly of modified food, vaccines and antibiotics

Commentary

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People should be concerned about genetically modified food, vaccinations and antibiotics—but probably not for the reasons they may think.

Most people worry about the effects of consuming genetically modified food when the bigger issue is how these products affect the larger ecosystem. In my biotechnology class, I remind students of the scandal a decade ago involving taco shells that included genetically modified corn. In 2000, fast-food chain Taco Bell and other taco shell suppliers were investigated by the U.S. Environmental Protection Agency (EPA) because some of their taco shells contained StarLink, a type of genetically modified corn used to feed livestock but not approved for human consumption.

How this genetically modified corn variety got into the food supply is still unknown. To date, StarLink—which EPA says has been removed from the food supply—has not been approved for people to eat.

Should we be worried about this incident because we eat at Taco Bell often? No, the larger concern is that this genetically modified crop somehow was introduced into the food supply without our knowledge. In addition to human health, we should also carefully consider the effects of genetically modified foods on animals, soil erosion, herbicide-resistant weeds and diminished crop diversity.

But, we should also consider the benefits, such as insect and weed control, increased crop yield and increased nutritional content of our foods.

The deal with vaccinations

I have students and friends who are wary of vaccinations. They believe that if their children receive the measles, mumps and rubella (MMR) vaccine, they could develop autism. In recent debates, thimerosal, a preservative containing mercury that is used in some vaccines, was tied to autism.

However, The Lancet, a prominent British journal, recently retracted an article that showed a link between the MMR vaccine and autism. And, according to the U.S. Food and Drug Administration, the use of thimerosal has been all but removed from vaccines for children since 2005.

Unvaccinated children pose a far greater risk to society than the threat of becoming autistic. Previously “wiped out” diseases are making a comeback, partly because of the
fear regarding vaccinations.

In the early 1970s, Japan experimented with removing the pertussis (whooping cough) vaccine. According to The Lancet, before removing the vaccine in 1974, 80 percent of Japanese children were vaccinated, and there were only 333 cases of whooping cough and no deaths. By 1979, there was a major pertussis epidemic in Japan, with 13,000 cases and 411 deaths. In 1991, the country resumed its vaccination program, and the numbers receded.

What would happen if we stopped vaccinating altogether? Diseases like polio, measles, mumps, rubella, diphtheria and tetanus could make a comeback. We cannot stop vaccinating our children based on the controversial data surrounding the autism debate.

The risk-to-benefit ratio is too great.

Should we be concerned about giving vaccines to our children? Sure, but we have to be smart and not go overboard one way or the other.

The bigger threat with antibiotics

I hear people talking about the overuse of antibiotics and the possibility that individuals’ future resistance to antibiotics will increase dramatically. This is a real threat, but it pales in comparison to what is happening in the agricultural world.

In addition to worrying about individuals with resistant strains of bacteria, we should also address the improper use of antibiotics in agriculture and the effect that is having on our environment. Animals being fed antibiotics over the long term become incubators for antibiotic-resistant bacteria. Not only can animals transmit these antibiotic-resistant bacteria to humans, but the animals are exciting the antibiotics into the soil and groundwater.

People could be harboring bugs that are becoming resistant to antibiotics they do not even know they are consuming. We should be worrying about the unnecessary use of antibiotics in both humans and animals.

Don’t overreact

I have a friend who threw out all of her plastic wrap and plastic containers when she learned that they could leach chemicals, such as BPA, into her food. She ran to the store and filled her cart with glass containers to replace her plastic ones.

Again, these are real concerns. But it is important not to overreact. Scientific literacy allows people to weigh the risk-to-benefit ratio. People worry excessively over the individual toxin “du jour” when in reality there are so many things in the environment that affect our cells in ways we do not understand.

People are justified in their concerns about BPA, mercury and other toxic compounds in our food and water supply. However, that information is like having a few pieces to a 5,000-piece puzzle. If you focus solely on three pieces, you will never complete the puzzle. The other 4,997 pieces might be just as important or even more important.

So how do we avoid excessive worry over things we do not know enough about? We have to develop a new perspective, which comes with scientific literacy. Society at large does not focus on the actual risks/benefits of certain technologies. Individuals do not question the source enough because they lack the confidence in their scientific knowledge to question claims.

Ultimately, all we can do is prepare for what we know. Yesterday, we prepared for the H1N1 flu virus. Tomorrow will most likely bring another issue. We never know where the next crisis is coming from. Be afraid, but temper that fear with scientific literacy.

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