NO MORE MEASLES!

The Truth About Vaccines and Your Health

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Introduction

When I was a child, I loved the television show *Gilligan's Island*. It was about seven people stranded on a desert island somewhere near Hawaii. My favorite character was the Professor. His name was supposedly Roy Hinkley. However, his fellow castaways never called him anything but Professor.

Despite having advanced degrees from several universities, the Professor was a humble high school science teacher. The other characters trusted him. They respected his intelligence, his education, his honesty, and his decency. The other castaways knew that the Professor sought knowledge for its own sake. They understood that he used his knowledge and wisdom unselfishly to help them.

Russell Johnson, the actor who played the Professor, had movie-star good looks. Since then, however, the entertainment industry in the United States has trained Americans to think that smart, educated people are unsexy "nerds." As a result, many Americans feel contempt for real professors. Many Americans would rather listen to the glamorous and seductive but uneducated Ginger Grant. They would rather

be seduced by a sexy celebrity than learn from a professor. Thus, when they want information about childhood vaccinations, they ignore scientists. Instead, they turn to uneducated but glamorous celebrities like Jenny McCarthy, who was Playboy Playmate of the Year in 1994.

Jenny McCarthy has no scientific or medical training, although she quips that she got "a degree in autism" from "the University of Google." McCarthy claimed that her son had autism and that his autism resulted from his measles-mumps-rubella (MMR) vaccination. McCarthy argued, "Think of autism like a fart, and vaccines are the finger you pull to make it happen." Yet as I will explain in chapter 16, the scientific evidence clearly shows that vaccinations have nothing to do with autism. To use McCarthy's crude metaphor, people will pass the same amount of gas whether their finger is pulled or not. Likewise, vaccination has no effect on a child's risk of getting autism.

Ironically, McCarthy's son might not have had autism to begin with. One neurologist, Daniel B. Rubin, MD, PhD, suggested that the diagnosis of autism was probably wrong in McCarthy's son's case. Dr. Rubin noted that the boy's condition started with seizures. After the seizures were treated, the boy's condition improved. In the August 7, 2008 issue of *Neurology Today*, Dr. Rubin explained, "This would be more consistent with Landau-Kleffner syndrome, which is often misdiagnosed as autism." Landau-Kleffner syndrome looks like autism because it affects the speech centers of the brain. If Dr. Rubin is right, then McCarthy's claim that she knows something about how to prevent or cure autism is bogus.

Today, we live in the Information Age. The Internet gives scientists like the Professor and even science writers like me quick and easy access to the world's scientific literature. Thus, the Internet makes it far easier for educated people to base their opinions on scientific evidence. Yet the Internet also enables fools, liars, and snake-oil merchants to broadcast nonsense to a worldwide audience. The Internet provides the 21st century version of the old-fashioned traveling medicine show, in which salesmen used showmanship to sell worthless and possibly dangerous potions.

Today, much of the antivaccination rhetoric comes from people

who are trying to sell you something that is probably worthless. The people who invest the money to build Web sites and produce documentaries to scare you away from vaccinating your children are nearly always selling something. Some of them sell high-priced dietary supplements that nobody really needs. Some sell homeopathic medicines that are really nothing but water. Some sell herbal products that are probably useless and are sometimes harmful. Some sell services such as spinal adjustment or "energy healing" that would have no effect on bacterial or viral infections.

Of course, conventional medicine is also an industry. For that reason, many people suspect that it serves the needs of its investors, rather than the needs of patients. These suspicions are sometimes well-founded. As I explained in my book *Thin Diabetes, Fat Diabetes*, doctors often use expensive drugs and surgical procedures instead of simple dietary advice to deal with problems that result from an unhealthy diet.

To see through the hype coming from both the conventional healthcare industry and the alternative medicine industry, you need to know some basic facts about history and biology. You also need to know how to think logically. Unfortunately, our public schools have generally been doing a poor job of teaching history and biology. Few even attempt to teach logic. This kind of educational neglect is no accident. As I explained in my book *Not Trivial: How Studying the Traditional Liberal Arts Can Set You Free*, our public schools in the United States have been deliberately dumbed down. Many schools use a method of reading instruction that does not work. Even for the children who somehow learn to read, most schools deliberately neglect the classical trivium of grammar, logic, and rhetoric.

In this book, I want to give people the biology and history lessons that they need in order to make rational decisions about vaccinations:

- What bacteria and viruses are, and how they attack our bodies.
- How the human body tries to defend itself against infection.
- How scientists prove that a particular disease is the result of infection by a particular germ.

- How government protects the public against the most dangerous infectious diseases.
- How the Food and Drug Administration decides which vaccines should be available in the United States.
- How the Centers for Disease Control and Preventions make recommendations about vaccination.
- How state governments decide what vaccines a child must receive before he or she can enter school.

Along the way, I get to tell some fascinating stories about the men and women who solved the mystery of infectious disease. I devote a chapter to each of the major vaccine-preventable diseases, including a discussion of the risks and benefits of the vaccines used to prevent them.

My goal in writing *Not Trivial* was to explain how to wipe out dyslexia and to put an end to racism and war. My goal in writing *Thin Diabetes, Fat Diabetes* was to reduce the death toll from diabetes. My goal in writing *No More Measles* is to inspire people to work together to drive measles, mumps, rubella, and a few other infectious diseases into extinction.

Many of the vaccine-preventable diseases reproduce only in human beings. If we can drive such a disease out of the human population through vaccination, the disease will be extinct forever. At that point, we can safely stop vaccinating people against it. Thus, we can save money and avoid even the small risk associated with using that vaccine. So far, vaccination campaigns have already driven smallpox and an animal disease called rinderpest into extinction. Another vaccination campaign has driven polio to the brink of extinction.

For more than a thousand years, smallpox was a major cause of death in Africa, Asia, and Europe. After 1492, smallpox devastated the populations of the Americas. Even in the 20th century, smallpox killed hundreds of millions of people. Yet thanks to the smallpox eradication campaign, there have been no cases of smallpox anywhere in the world since the 1970s. That's why we no longer vaccinate children against smallpox.

After we drive measles, mumps, and rubella into extinction, there

people stays just high enough to keep the diseases circulating. So the campaigns to eradicate diseases like smallpox and polio are driven by compassion, not greed.

To control the spread of a vaccine-preventable disease, we need to vaccinate nearly everyone. Unfortunately, a growing number of parents are refusing to allow their children to be vaccinated. In many places, the number of unvaccinated people is large enough to allow serious diseases such as whooping cough to circulate. For humanity to win the battle against measles and other eradicable infectious diseases, wisdom must triumph over fear.

Part 1

Scientific and Political Debates

Vaccination has become a hotly debated topic. Like many debates, this one is ugly—for a simple, understandable reason. The people on both sides of the debate feel that their opponents are exposing children to danger. Doctors, scientists, and public health officials insist that the vaccines are necessary and that the benefits of vaccination far outweigh the risks. They feel that people who refuse to vaccinate are neglecting their own children and exposing other people to danger. In contrast, many antivaccination activists insist that the vaccines are unnecessary and pose unacceptable risks. Many of them believe that the vaccine makers are engaged in a criminal conspiracy to poison children, either simply for profit or as part of some attempt at genocide (even though vaccination has clearly saved lives).

The only way to put an end to this nasty bickering is to eradicate as many of the vaccine-preventable diseases as possible. Once a disease becomes extinct, there is no need to vaccinate any more people against it. As a result, children will need fewer shots and adults will be able to avoid many pointless arguments. Nowadays, no children are being

vaccinated against smallpox. An international vaccination campaign drove smallpox into extinction in the 1970s. But to drive an infectious disease into extinction, you need to vaccinate a huge percentage of the population. Such high vaccination rates can be achieved only if the vaccines are mandatory.

Many people are against mandatory vaccination. They feel that the individual has a right to reject unwanted medical treatments. Yet the vaccines for the most serious diseases are given only during childhood. Thus, when adults reject vaccination, they are making that decision mainly for their children, not for themselves. Thus, the real issue is not self-determination. It's about who should make the decisions that affect a child's health.

When should the state step in to protect a child and the larger community? That is an ethical and legal question. But to answer it, we must first answer the scientific questions of how effective and how safe the vaccines are. I'll discuss the relationship between science and democracy in chapter 1.

To make good decisions about vaccination, you need to know something about biology. It also helps to know something about history and politics. The medical profession has existed for thousands of years. Yet for most of its history, the medical profession had remarkably little of any value to offer to patients with an infectious disease. In chapter 2, I'll explain how scientists discovered germs. In chapter 3, I'll explain how modern governments have made great progress in preventing and treating the diseases that are caused by germs.

As I explain in chapter 4, some of the forms of alternative medicine that are still popular today arose because many of the medical treatments that were being taught in even the top universities in the 18th and 19th centuries were ineffective and dangerous. Since then, of course, medical science has had astounding success in developing safe and effective ways to prevent and treat many serious diseases.

Modern medicine has gotten particularly good at preventing and treating infections. In 1900, most of the top ten causes of death in the United States were infectious diseases. But in 2010, only one of the top ten causes of death was infectious: influenza and pneumonia, which

together ranked ninth as a cause of death. In chapter 29, I'll explain why influenza is so hard to conquer. In contrast, the medical profession and our public health agencies have done a poor job of managing the chronic diseases that result from lifestyle choices, such as our rich diet, cigarette smoking, and alcohol abuse.

It is puzzling that so many people campaign so hard against vaccination. The benefits of vaccination clearly outweigh the risks for nearly anyone. The people who campaign against vaccination seldom have a science education, and they never offer persuasive scientific evidence in support of their views.

We really do need citizen activists to keep an eye on how medicine is being practiced. But first, the general public must have a clear understanding of the relationship between science and democracy.

1

Science and Democracy

Like many Americans, I was brought up to believe that democracy is a good thing and that free and open debates are essential to democracy. Unfortunately, something seems to be going wrong with the way we in the United States engage in debates. Our debates seem to be generating more heat than light. Our debates about vaccination have been particularly ugly. Vaccine researchers have received verbal abuse and even death threats. Can you imagine the other castaways on *Gilligan's Island* treating the Professor that way?

The word *science* comes from the Latin word for knowledge, but it refers to knowledge of a particular kind. *Science* refers to knowledge that is gained through a logical analysis of careful observations, including the results of experiments. *Science* can also refer to that process for gaining knowledge. A scientist is someone who dedicates his or her life's work to gaining knowledge in that way.

The word *democracy* means rule by the people. In a democracy, ordinary people get to take part in making the decisions that affect them. These decisions are made in public through some process that

involves public discussions. Sometimes, democracies make rules that put limits on an individual's freedoms. For example, traffic rules limit your freedom to drive however and wherever you wish. Yet those rules are generally accepted because they improve public health and safety.

As I discuss in chapter 5 of *Not Trivial*, there are several different kinds of discussion, each of which serves a different purpose. The political discussions within a democracy deal with two kinds of questions: scientific questions (i.e., questions about what is true) and policy questions (i.e., questions about what should be done, and who should do it).

To make good policy decisions, the people must first find reliable answers to some scientific questions, so that they can predict what the effects of various policies would be. Then, they must use a process of negotiation to come to a consensus on what should be done, and by whom. In discussions about vaccination policy, we seem to get stuck on the scientific questions. Unfortunately, many people are ignoring the scientists. Too many of us are listening instead to attention-seeking celebrities and profit-seeking entrepreneurs instead of to professors.

To get reasonable answers to scientific questions, one must use facts and logic. As John Adams, who later became the second President of the United States, once wrote, "Facts are stubborn things; and whatever may be our wishes, our inclinations, or the dictates of our passion, they cannot alter the state of facts and evidence." The rules of logic are also stubborn. When you have a given set of facts, the rules of logic sometimes lead to conclusions that you do not like. You may choose to deny the facts, but denial does not change reality.

Nonscientists often do not understand or appreciate what goes on in scientific debates. They may not understand that there are rules for deciding who wins, just as there are rules for deciding who wins a card game. Yet the rules in a card game were designed to make the game fun. Science is not a game, and the rules that scientists follow were not made up for fun. They were developed through a long and sometimes painful process of recognizing and correcting mistakes.

When people with no scientific training try to take part in scientific discussions, they often make errors of fact and errors in reasoning. They are simply unaware of many important facts. Nor do they know

how to draw reasonable conclusions from the facts. In other words, they make mistakes because they lack knowledge and thinking skills. Yet because of their lack of knowledge and thinking skills, they cannot spot their own mistakes.

Of course, scientists face the same problem. Scientists don't always know all the facts that they need to know. They can also make errors in reasoning. Yet the scientific community has ways to solve those problems. Scientists take part in scientific discussions so that they can share their knowledge with each other and correct each other's mistakes. These discussions help scientists develop theories that provide a better description of reality, as well as finding better ways to solve practical problems.

Because of their knowledge and thinking skills, scientists can make important contributions to other kinds of discussions. For example, journalists often interview scientists when covering stories about scientific issues. Likewise, lawyers often hire scientists to serve as expert witnesses in court cases. Of course, judges don't allow just anyone to serve as an expert witness. To serve as an expert witness in a court case, you generally have to have some sort of expertise. You need qualifications, such as special training and experience.

When journalists choose sources for an article about some scientific question, they should be just as picky as a judge. Unfortunately, journalists often use an approach called false balance, in which they interview some crank who has kooky, provocative views about some important topic and then provide a comment or two from a genuine expert, supposedly for balance. Although this approach may seem to be fair, it is misleading. It can give fools and liars far more publicity than they deserve. The fact that their comments are given at the top of the story even lets them outshine the real experts.

As I'll explain in chapter 1, scientists are valuable members of a democratic society. Yet science itself is not democratic. Facts, being stubborn things, do not obey the will of the people. You cannot make something true by persuading the majority of the population to believe it. Nor is everyone created equal when it comes to a scientific debate. People who have dedicated their careers to studying a particular

scientific discipline are likely to know far more than the average person about that subject. A wise person listens carefully to scientists.

To have a reasonable discussion about who should get what vaccines, you need to know something about history and biology. You also need to know something about the basic rules for how to have a reasonable discussion. In the following chapters, I'll give you an overview of how scientific medicine arose. I'll also explain how and why some popular alternative approaches to modern medicine were developed. I'll also explain why you are usually better off listening to scientists than to uneducated people, at least when any sort of scientific question is involved.

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